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EDITORIAL—SOME HIGHLIGHTS

I General Economic Scene

State:

Third Annual Plan: As forecast in the last issue (p 72), the Third Annual Plan for the State (1976-77) has been established in agreement with the Union Planning Commission at Rs. 177 crores against the State's Draft Plan request of Rs 277.60 crores, later reduced to Rs. 182 crores. This compares with the Second Annual Plan of Rs. 143.6 crores, the actual expenditure being higher at Rs. 160.90 crores. For the Second Plan, the Union assistance was Rs. 41 crores. The Union Agriculture Ministry allocated to the State Rs. 8 crores during 1975-76, Rs. 3 crores for the kharif and Rs. 5 crores for the current rabi season. The quantum of Union assistance for the Third Annual Plan is still to be negotiated between the State and the Union Planning Commission. The sector breakdown for the Third Annual Plan compared to the draft request given in brackets is as follows: Agriculture Rs. 22 crores (Rs. 22.01 crores): Co-operation Rs. 2.53 crores (Rs. 2 crores): water and power development Rs. 80.84 crores (Rs. 117.02 crores): industry and minerals Rs. 9.85 crores (Rs. 13.48 crores): transport and communication Rs. 12.18 crores (Rs.16.60 crores): social and community services Rs. 43.90 crores (Rs. 54.67 crores). The deepest reductions are in water and power development and social and community services. The cut in power and water is serious as the future development of the State depends on investments in this area. The State will have to mobilise resources to increase the outlay, particularly in power.

Economic Trends—An Inter-State Analysis (See Second Article in this issue):

Prices and Drought: Prices have continued to decline in January. Rice prices declined to Rs. 2.20 per kg. and in some cases even to Rs. 2 a kg. Boiled rice was selling at Rs. 1.70 to Rs. 1.80 per kg. As the rabi harvest comes to market, prices will ease further all over the State except in pockets hit by drought. Despite the very good rains in the State from both the South West and North East Monsoon (see Vol V pp 514 and 574 and Vol VI p 2), parts of Tirunelveli, Ramanathapuram and Madurai districts have had a second year of drought. There is severe scarcity of drinking water in those areas covering 700 villages; only 39,000 acres out of 2 lakh acres in the non-Tambaraparani river system are growing paddy; almost total drying up of dry and commercial crops in the region is reported; due to lack of fodder, there is distress sale of animals; some migration to neighbouring Karnataka of the drought hit people and the arresting of cottage industries dependent on agriculture such as palmyrah tapping and palmgur making are reported from these distressed areas. The government has deputed a member of the Board of Revenue to deal with this drought hit

area, has announced remission of land revenue and tax payments, postponement of government loans recovery and an allocation of Rs. 5 lakhs for Tirunelveli district and Rs. 5 lakhs for Ramanathapuram district for use as takkavi loans for deepening private irrigation wells. The distribution net work for making available subsidised rice, cloth etc. through co-operatives and other village outlets are being activised. The government promulgated 3 ordinances extending the period of moratorium on debt repayments (see Vol V pp 264 and 454) by agricultural and non-agricultural debtors by 3 months up on April 15. This will give the farmers and urban poor time to rehabilitate themselves with the revived agriculture and industry, and on that basis repay their debts and interest dues to various persons. Also the government has recommissioned the U. S. artificial rain making team (see Vol V p 389) to undertake similar activities in parts of Madurai and Ramanathapuram districts with the equipment they brought in for the Madras area.

Power: The power situation in the State continued in January to be normal as reported in the last 3 issues. The government reintroduced from January 18, grouping restrictions for all rural electricity users. Under this system, rural units are divided into 2 batches, the first receiving power from 6 A.M. to 12 noon and the second from 12 noon to 6 P M. Between 6 and 10 P.M. there will be no power supply which will be resumed from 10 P.M. to 6 A.M. The two batches will be rotated fortnightly and in this manner the operation of the pumpsets which have been bunched together in their use will be staggered. It will also meet the problem of the reduction in the hydel generation consequent in the reduced irrigation discharge (due to good rains). The existing demand on the Tamil Nadu grid will now be spread out more evenly. There is also the problem of electricity losses due to unaccounted and unauthorised utilisation of energy which the tamper proof meter being developed by REC might help to prevent. To diffuse energy to the small farmers, the development of irrigation co-operatives will help them economise on investment both in pumpsets and electrification, and ensure at the same time better load factors beneficial to the system. The government is also negotiating with the Kerala government for the purchase of power from that State. From June to December the State has purchased from Kerala 250 million units at 9.5 paise per unit. The government is planning to purchase as much power as Kerala can make available.

In the country as a whole, December saw the best balance between demand and supply of power at 240.7 million units per day and 241 million units respectively. Thermal generation was 10 per cent more between April and December compared to the same 8 months in 1974. Orissa provided power to Andhra Pradesh and Bihar to ensure for them normal power supply. In Andhra Pradesh Sileru's 200 MW projects are to be commissioned by April and Srisailam hydel and Kothagudam thermal will go on stream in 1978. Chambal and Baadipur met the additional power requirements of Rajasthan and Himachal Pradesh. In Karnataka restrictions on certain categories of loads were continued in January to spread the shortage evenly until the next monsoon. In UP notified restrictions, exempting essential requirements, continued in force. In Maharashtra from the last week of January further relaxations in the power cut went into force, for textiles reducing the cut from

35 to 20 per cent, for continuous process industries from 46 to 30 per cent and for general industries from 54 to 40 per cent. These were made possible by the commissioning of Tata's Trombay No. IV unit, and the return to line of Nasik II and Koyna III. The programme to produce 500 MW sets is being postponed to the Sixth Plan, in order to give BHEL time both to build the units and the servicing facilities needed, to meet its special problems of coal handling, firing, pressure control and transmission. The Super Thermal plants (see last issue p 73), will be set up with 5 or 6 sets of 200 MW which BHEL now fabricates and services, rather than with 500 MW sets.

Water: Following the 5 State Godavari agreement (see last issue p 74), in January there was an agreement between Punjab and Kashmir on the Rs. 200 crores multi-purpose Thein Dam project across the Ravi which will generate 480 MW power and irrigate one million acres in the 2 States, and an agreement between Gujarat and MP on the use of the Narmada waters. Official level talks between Tamil Nadu, Karnataka and Cauvery have been intensified with a view to reaching an early agreement on the Cauvery waters. To deal with the present and future water supply and sewage problems of the Madras Metropolitan Area (MMA) which comprises Madras city and 400 sq miles of Chingleput district which will have a population of 5.8 millions in 1991, the government has organised a 27 months pre-investment survey. On the side of potable water, MMA has a per capita water availability of 70 litres per day for domestic and industrial use, but due to detective distribution, the availability is 40 litres per capita per day. The Red Hills - Cholavaram supply meets less than 50 per cent of the need and even when the 220 KM long Veeranam pipeline brings in water from 1977, the supply will be inadequate. Out of over one lakh consumer connections, only 10,000 are metred and 3,000 in working order, so that water supply is only for 3 to 4 hours per day and subject to contamination due to faulty joints. In the sewarage system, branches, collectors and interceptors are overloaded, maintenance is poor, pumping capacity inadequate and blockages frequent. The Rs. 2 crores study will make recommendations for short term relief of potable water supply and sewarage deficiencies and a long term plan to meet MMA's needs in both areas.

Transport and Highways: The State government has received an allotment of Rs. 120 crores in 1975-76 for 10 highway schemes. The World Bank is appraising the viability of the other 17 highways schemes costing Rs. 13 crores. In this connection, the need for continuous R and D in fully equipped laboratories for road laying which has become a highly specialised science was emphasised at the 36th session of the Indian Roads Congress. This will ensure proper quality control and for this purpose the State government should take advantage of the one per cent earmarking for R and D of the project cost of the highway schemes financed by the Union government. For rural roads for which the Fifth Plan national provision is Rs. 500 crores more use of locally available materials should be ensured and this is an urgent R and D subject matter. In regard to public transport, an NPC study on the reduction of fuel consumption by the State Transport Corporation shows that the mileage can be increased from 3.5 KM to 4.5 KM per litre if (a) a control card is used for each vehicle,

(b) fuelling practices are changed, (c) fuel is tested, (d) vehicle defects continuously monitored, (e) drivers are trained in these matters, (f) a tachograph is installed in each vehicle and (g) a bus bank is operated. On this basis the State Transport Corporation should develop a standard for fuel consumption and the allowable tolerances and train the drivers in these limits. As noted in Vol V p 651, the national permit for vehicles scheme introduced in the September ordinance has been followed by the requisite Motor Vehicles National Permit rules finalised in January under which each permit holder must choose four contiguous States besides the home State for operation, paying the home State taxes, Rs. 700 annually as composite fee for each of the other States he chooses, Rs. 150 for each Union Territory and Rs. 500 as initial fee. It is expected that 5,300 permits will be issued annually under this scheme. On the telecommunications front, the Southern Regional Telecommunications circle is undertaking Rs. 81.7 crores of projects in the 4 Southern States covering the laying of coaxial cables (Madras - Calcutta with divisions to Hyderabad and Vijayawada, Bangalore - Coimbatore, Madras - Tiruchi, Madurai - Tindivanam), micro wave links between Madras - Bangalore, Madras - Tirupathi, Coimbatore - Bangalore and 2 trunk telephone exchanges between Coimbatore and Trivandrum. There is also the Indo - Sri Lanka micro wave link project which will complete the links between the main commercial centres within the South and Sri Lanka. On the air transport side, IAC has completed construction of a 30 tonnes capacity export warehouse for bonded cargo at Meenambakkam to be increased to 40 tonnes capacity by next year, with the existing 20 tonnes cargo building being used for domestic cargo. IAC has increased its cargo movement from Madras to Bombay from 120 tonnes in October, 150 tonnes in November and 190 tonnes in December. With the reduction of the back log to 15 tonnes at the end of the month, the air service to the export effort is a significant one. The State government is acquiring a passenger ship to operate between Madras and Rameswaram as a tourist facility, via Cuddalore, Pondicherry and Nagapattinam. This, in addition to the 9 inter district air services to be run by the Tamil Nadu Tourist Development Corporation (see Vol V p 517 and Vol VI p 5) will expand tourist activities in the State.

Housing: In January, 4 storey pre-fabricated houses were erected in Besant Nagar at the rate of 3 apartments every 5 days. Roofs, walls, stair cases and 25 other components of each flat are fabricated and assembled on site with the help of a 5 tonne tower crane. SERC has made available the technical consultancy, providing the design and techniques of pre-fabricating. The State Housing Board is building 114 apartments in 6 blocks for the MIG class. The Madras Fisheries Department is already using the ferro cement in use in this pre-fabricating housing project for fishing boats and the city corporation for man hole covers. Apart from its strength, ferro cement is lighter and cheaper—a 10,000 litre water tank costing Rs. 1,700 and weighing only 2.8 tonnes, about 1/3 the cost and weight of a cement tank. The Union ministry reports that 2.48 lakh houses have been built under the LIG scheme, with Maharashtra and Punjab being in the lead. Tamil Nadu's record in building houses for the landless, of which one lakh have been built all over the country, is acknowledged. The need for expanding

and pushing ahead with all housing schemes and lifting all restrictions on construction activity is once more emphasised.

Small Savings : More than 50 per cent of State employees in this State participate in the pay roll saving scheme—7.5 lakhs out of 14 lakhs. For the first seven months of the year, April-November, the savings amounted to Rs. 12.32 crores against the year's target of Rs. 18 crores. The State's lead position in this scheme is in part due to Thanjavur district's contribution of Rs. 2.77 crores followed by Salem, Rs. 1.57 crores. Further in Thanjavur and North Arcot districts all high schools—239 and 261 respectively—are covered by the scheme. This small savings movement should be extended to other employees as well as self-employees in the State.

National :

Fifth Plan—Third Year : By mid January, discussions between the Union Planning Commission and the States and Union ministries were completed, as a result of which the total annual plan for the third year of the Fifth Plan is likely to be Rs. 7,200 crores, which, as the Minister of Planning stated in the January session of Lok Sabha, would amount to a 25 per cent increase compared to the Second Year Plan outlay (Rs. 5,978 crores). The State's outlay would be Rs. 3,380 crores for the third year compared to Rs. 3,160 crores for the second year and the Union ministries would be little less than Rs. 4,000 crores. Though the percentage increase for the second and third year is about the same, being 23 per cent and 25 per cent respectively, with 7 per cent decline in wholesale prices, the third year's increased outlay represents a real increase, which should make possible the realisation of higher physical targets. During the second year the State's resource mobilisation was good as pointed out in Vol V p 578, being Rs. 210 crores against the Rs. 178 crores target. The overdraft position of the States at the end of the second year continues to be disturbing, being Rs. 426 crores gross and Rs. 297 crores nett in January, with the likelihood of the year ending with an overdraft of Rs. 450 crores—due in part of the droughts and floods suffered by Tamil Nadu and Orissa, Gujarat and Rajasthan. Union assistance to the State plan for the second year amounted to Rs. 1,093.17 crores as plan assistance, comprising Rs. 766.21 as normal Union assistance, Rs. 158.15 crores as special advance assistance to cover plan gaps in 11 States, Rs. 58.65 crores as advance irrigation and Rs. 28.75 crores as advance power assistance. UP, Bihar, Kashmir, AP and MP received the largest plan assistance at Rs. 183.86 crores, Rs. 113.24 crores, Rs. 80.97 crores, Rs. 72.83 crores and 62.88 crores respectively, with Tamil Nadu following at Rs. 58.49 crores. Including all forms of non-plan assistance, the total resource transfers to the States during 1975-76 will be Rs. 2,498 crores as against the budget estimate of Rs. 2,200 crores (see Vol V pp 199-200). The Third Year Plan outlay is planned to lay emphasis on oil exploration, irrigation, power, mining and transport equipment with same increase in social expenditures. The increased public sector investment, also made possible by improved public sector performance analysed in the past issues of the Bulletin, should increase and improve the performance in the private sector bringing the industrial production growth rates nearer to 8 per cent than the current 4 to 5 per cent. It is now necessary to finalise the Fifth Plan and relate the annual plan objectives,

targets and performance to the medium term objectives and targets of the Fifth Plan. Any further delay in this process would represent an abandonment of the Plan and seriously hamper the long term perspectives of the economy.

Prices and Anti-inflation: The Economic Advisers' wholesale prices index recorded a continuing of the price decline for December from 298.9 for the week ending November 29 to 291.4 for the week ending December 27. The major part of the fall of 7.5 points or 2.5 per cent during December took place in the last week between December 20-27 when the price decline was by 4.3 points or 1.4 per cent. Upto that point the index ranged between 295.5 and 295.7 points. The fall in the last week was almost entirely due to the fall in rice prices by 3.3 per cent and over the month by 10 per cent, groundnuts by 3.3 per cent both in the last week and the month as a whole, and jute manufactures by 2.4 per cent over the last week and 4 per cent over the month. Raw cotton on the other hand rose by 3 per cent during the last week and 5 per cent over the month, and raw jute by 0.8 per cent and 3 per cent respectively. The lag between the fall in wholesale and retail prices continued in December as seen in the Economic Times general retail price index for Greater Bombay which showed a 0.1 per cent fall in retail prices over the previous month (see last issue p 76). Here too food item prices showed a marked decline, cereals by 3 per cent, oils by 7.4 per cent vegetables and fruits by 3.7 per cent, clothing by 1.6 per cent, while pulses rose by 4 per cent, fuel and light by 5.6 per cent and rents by 5.2 per cent. Among the anti-inflationary measures taken by the government, the Voluntary Disclosure Scheme which terminated on December 31 with a rush of disclosures as outlined in the last issue p 77, realised a final total of Rs. 1,553 crores by 2,50,000 assessees, as stated by the Minister of Revenue and Banking in the January session of the Lok Sabha. This disclosure included Rs. 812.11 crores in concealed wealth giving the government a wealth tax of Rs. 6.91 crores and Rs. 714.24 crores in concealed incomes which gives the government an income tax revenue of Rs. 241.14 crores. This windfall revenue accrual of Rs. 248 crores should keep the budget deficit down and in that manner also damp down inflationary forces. On the basis of this experience, it is hoped that voluntary disclosures will continue, as it is probable that only about 5 to 10 per cent of concealed wealth and incomes have so far been declared. For this, there is need for both the stick,—raids, seizures and arrests by the tax authorities,—and the carrot,—the waiving of prosecution for those who come forward to declare concealed incomes. Other long term results should be increasing investment in the core sector, increasing the number of tax payers by 2.5 lakh persons, and some unfreezing of the trade and market channels which have been paralysed through the immobilisation of this concealed resource. There are however some signs on the inflation front which need review. According to the RBI report, bank credit to the commercial sector for the busy season period, October - December, was Rs. 474 crores, being a high Rs. 198 crores in October, a moderate Rs. 8 crores in November and a very high Rs. 268 crores in December, when the credit totalled Rs 8,836 crores. Before the end of the busy season in April, there will be further increases and the Reserve Bank's easing of controls through doubling the exemption under the credit authorisation to Rs. 2 crores and the withdrawal of the 10 per cent

margin on bank advances may involve either further loosening of the refinance and bill rediscounting facilities or a tightening up of credit at the wrong time. The credit expansion is not warranted either by the rate of growth of the economy, industry and trade during this period or by the fall in wholesale prices of industrial raw materials which have occurred. Nor is the increase in deposits by 16 per cent during the year a sufficient explanation, as 35 per cent of the increased deposits have to be set apart for statutory investment and cash balances. This situation might bring into force the Tandon Committee guidelines for determining credit limits to borrowers above Rs. 10 lakhs. The guidelines bifurcate the credit limit to a firm in a year into a minimum representing the loan to be used throughout the year using cash credit to offset fluctuating requirements, and a maximum to meet the working capital gap on the basis of the borrower contributing (a) a minimum of 25 per cent of the working capital gap, or (b) a minimum of 25 per cent of his total current assets from owned and long term funds or (c) his entire "core current assets" plus a balance of 25 per cent of the balance of his current assets. In the case of borrowers with Rs. one crore and above credit limits, the credit line is to be as a quarterly budgetting reporting system. As a transitory measure, the maximum will follow the first alternative (a) for the first year and then move to the second and third alternatives (b) and (c) in stages. The banks should be guided by the debt equity ratio and the current ratio of each borrower plus the follow up and supervision of credit and the end use of the funds. The committee's interim report on inventories and receivables for 15 selected industries and applied to all borrowers with aggregate credit limits above Rs. 10 lakhs has been accepted by the government and is being executed by RBI as outlined in Vol V p 655. Now the final report summarised above is under study and should be executed in a phased manner. The double objective of the Tandon Committee guidelines is to impose a certain inventory and financial discipline in industry. This calls for real management expertise in the banks and for a full exchange of information between the banker and the borrower, which can then be worked to the mutual profit of both as well as of the health of the economy. This is supported by RBI's positive report in January of the scrutiny of the borrowal accounts of the 50 largest borrowers which shows in general that given the pace of production, the level of inventories, and offtake of finished goods, the funds borrowed have been used for legitimate productive purposes. There are the black sheep, some using credit to hoard and build up inventories, and there has been some lack of consultation among the banks on the credits extended. The guidelines proposed will correct these aberrations and, provided banks develop real management expertise, will not impose hardships on the sound firms. It will also continue the trend of a decline in inflated credit needs statements. In January also, the RBI study of the lead bank scheme in Gujarat and Maharashtra has thrown up some guidelines. Their area development performance has not been wholly satisfactory. The first phase of opening new branches in areas holding potential for bank operations has been a success (SBI has opened 747 branches in 97 districts, Punjab National 235 branches in 39 districts). New guidelines have been developed for them to formulate and execute area development programmes, through an appropriate credit plan, concentrated on priority sectors,

integrated into district development plans.

The Economy : RBI's report on Currency and Finance for the year ended June 1975, forecasts an optimistic 5 to 6 per cent growth rate for the *Indian* economy for 1975-76 against the estimated 2 per cent recorded in 1974-75. It records a rise in 1973-74 of 3.1 per cent *in national income at* 1960-61 (constant) prices, compared to the —0.9 per cent of the previous year. Domestic savings as a ratio of national income declined from 12.1 per cent in 1973-74 to 11.8 per cent in 1974-75 (in 1972-73 it was 12.6). The continuous decline in saving it attributes to the household sector, due to the need to maintain minimum consumption levels at very much higher prices. Aggregate domestic investment works out to 13.8 per cent of the national income compared to 12.9 per cent in 1973-74, the share of domestic saving in the investment having declined from 94 per cent in 1973-74 to 86 per cent in 1974-75 and per contra the net inflow of foreign resources rose from 6 per cent to 14 per cent of NNP. The Economic Times computes that there was a sizeable increase in corporate savings and capital formation in 1974-75 compared to 1973-74. Due in part to the dividend limitation ordinance and industrial growth in some sectors, corporate savings in 1974-75 was Rs. 977 crores gross and Rs. 441 crores net, compared to Rs. 727 crores and Rs. 246 crores in the previous year. The net capital formation of this private corporate sector was Rs. 1,605 crores, which was an increase of 11 per cent against the previous year's 8.7 per cent. Agriculture performed well with 104 million tonnes compared to the previous year's 103.5 million tonnes, with increased production in cotton, sugar cane, coffee and tea and declines in jute and oil seeds. Industry grew by 3 per cent in 1974-75, for April - September 1975 the official index shows a rise of 3.6 per cent with the hope that it may rise to 5 per cent for the year as a whole. The wholesale price increase slowed down to 0.4 per cent, money supply expansion slowed to 6.3 per cent compared to the previous year's 14.9 per cent, credit was rationed with higher interest rates and various controls on credit with a slow rise in deposits, budget policy recorded a notable increase in resource mobilisation of Rs. 1,048 crores but a combined Union and States deficit of Rs. 727 crores compared to the previous year Rs. 234 crores, both capital consents and new issues increased by 95.5 and 71.4 per cent in the first half of 1975 compared to the second half of 1974, the unfavourable trade balance was 1,096 crores (see Vol V p 402) and foreign exchange reserves drawals including IMF stood at Rs. 969.2 crores on March 31, 1975; without them it was Rs. 462 crores. This review does not really support the growth forecast for 1975-76. What is needed is an increase in savings and investment and a countering of the sectoral recessionary forces on which the review is silent In fact on the basis of industrial statistics released by the Union ministry in January, it is seen that out of 104 industries, production in 47 industries is lower this year than in the previous year, including essential goods industries as hurricane lanterns, dry cells, plastic foot wear, detergents, matches, paper, leather footwear, as well as cotton cloth, yarn, cars, jeeps, newsprint, phosphatic fertilisers, textiles, sugar, paper, chemicals and pharmaceutical machinery. To counter these trends, the government has withdrawn the ban on construction in government departments and public sector undertakings to stimulate the demand for

cement and steel: private sector investment began showing an uptrend in 1975 being Rs. 97.8 crores compared to Rs. 60.2 crores in 1974. On the industrial front, the industry ministry estimates that about 4,000 new small scale units with a total capital investment of Rs. 66 crores have closed down because of recessionary forces. These were units run by technicians producing automobile parts, general engineering items, electrical and plastic goods and chemical items. The ministry also estimates that an investment of Rs. 1,500 crores is lying idle due to the closure of these small and medium units. If revived, they could produce Rs. 500 crores worth of goods and Rs. 50 crores in government revenue. The government is therefore planning to take a number of steps to revive these units. It has announced its intention to remove irrelevant controls on the industries, to simplify the procedure for collecting excises from small units and their registration, to refix capacities in certain selected industries on the basis of critical inputs, to open as many closed units as possible and give a 2 - 3 year period to others to reopen and pay their debts, and to encourage public sector banks to open a new line of credit at concessional rates to help private sector industries modernise their plants. The neglect of maintenance and plant modernisation has become chronic in the textile industry as pointed out by the World Bank team (see last issue p 82) and this measure would meet an urgent need. These plans should be translated into speedy action as a means of reviving the stagnant economy.

Public Sector Performance: Nine public sector units improved their production in the first nine months of 1975-76; Hindustan Cables by 61.35 per cent (99.68 per cent of its target), Hindustan Photo Films by 128.35 per cent (92.76 per cent of its target), Cement Corporation, Bharat Ophthalmics, Instrumentation Limited, Nepa Mills, National Instruments and Hindustan Paper whose increases ranged from 37 per cent to 165 per cent compared to the April to December production of these units in 1974. HEC increased its production of steel plants, machine tools, iron and steel castings, forgings and rolls and molten metal during October-December 1975 by 38 per cent compared to the corresponding quarter of 1974. On this basis, of the Rs. 57 crores of outlay, the public sector undertakings will be expending Rs. 52 crores and for 1976-77 the approved outlay is likely to be Rs. 70 crores. This is a continuing good record.

National Production Front:

Steel: Against the target for the year of 5.7 million tonnes, which is 16 per cent higher than the 1974-75 target, total production for the year is likely to be 6 million tonnes. Bhilai which produced 1 9 lakh tonnes in January 1975 ended with 2.02 lakh tonnes in December, Rourkela with 99,000 tonnes and 1.13 lakh tonnes, Durgapur with 72,000 tonnes and 1.07 lakh tonnes and TISCO with 1.27 lakh tonnes and 1.28 lakh tonnes. Bokaro produced 82,037 tonnes in December, being 108.3 per cent of its capacity, Durgapur produced 9,621 tonnes of alloy steel, being 115 per cent of its target in December. TISCO though producing a lower 1.28 lakh tonnes in December will be producing 1.48 million tonnes in 1975-76 and Rourkela will exceed one million tonnes for the year. Bhilai's expansion from 2.5 million tonnes to 4.7 million tonnes is under way and will be completed in the Sixth Plan. The good performance in 1975 of the plants is largely due to good

industrial relations in all the plants with a noticeable decline in manhours lost. The results have been plentiful supply of steel with well, perhaps overstocked stockyards, free *distributions* of *all* categories of steel, the disappearance of black market prices and a sharp *decline in* imports and increase in exports. In *1974-75 steel imports were Rs. 346 crores* and for 1975-76 are likely to be Rs. 90 crores. Exports of *steel have been* booked for Rs. 200 crores (1.2 million tonnes), of *which Rs. 100 crores will be realised in* 1975-76, giving a surplus balance of Rs. 10 crores. The one problem is the glut in the stockyards, TISCO alone having a stock of Rs. 50 crores, the recession in building adding to the problem and Japan offering stiff competition with lower prices in the overseas market. SAIL is therefore building a buffer stock of half to one million tonnes of steel which will cost Rs. 125 crores in inventory investment. SAIL would have a buffer stock organisation either buying the stock and exporting it when international prices rise or buying it at a price minus producer's profits and excise which will cut the cost of the buffer by Rs. 45 crores. SAIL is also working on a 25 year expansion plan as noted in the last issue (p 79), to produce 75 million tonnes by 2001 AD. The current 5 expansion plans, also reviewed in the last issue, are in support of this plan.

Crude : For 1975-76, total crude requirements are likely to be 22.30 million tonnes, of which 8.35 million tonnes would be indigenous production and 13.95 million tonnes imports, involving a foreign exchange outgo of Rs. 1,056 crores. The United Arab Emirates are to supply *one million* tonnes of crude during 1976, Iraq will supply 2.9 million tonnes of crude, Iran 2.6 million tonnes for the Madras refinery, and 5 *lakh tonnes being* ONGC's accrual from its Rustom oil fields in Iran. SCI *has purchased a second* 1.17 lakh DWT super tanker which is on long term *charter to* Madras refineries, and is importing 93,000 tonnes of crude from *Iran to the* Madras and Vishakhapatnam refineries. In this situation the intensifica*tion of internal* production becomes urgent. Out of the 10 'wells drilled in Bombay, the presence of hydro-carbon was established in 9 and the production of *0.5 million* tonnes at the rate of 2 million tonnes this calender year is assured, saving the country Rs. 37 crores in foreign exchange. For phase one tour fixed steel platforms are being installed north of Bombay High, by the U.S. firm Mc dermott which is also laying the pipeline. These platforms are to be connected to production platforms where the oil is processed and pumped to the storage tanker by sub-sea lines, from where another tanker will carry the oil to the refineries. The second well in the Bay of Bengal also shows the presence of hydro-carbon and the first well in the Kutch basin has been completed. A scientist's plan for a land deed seismic sounding profile across the Cambay basin and 3 marine profiles across the West Coast of the country is under ONGC study. The January session of the Lok Sabha passed a bill for the take over of Burmah Shell which is to be known as Bharat Refineries *and involves the payment of* Rs. 27.75 crores as compensation to be paid in 4 instalments. In addition Rs. 6.09 crores will be paid as interest *charges* on the *principal* amount. With the take over of this concern from 1 January 1976, its 30 per cent of the country's total retail outlets now passes into the government's hands. Its refinery will handle the 2 million tonnes of Bombay High crude without any alteration.

Coal : The closing week in December saw the most serious mining accident in the country in which 360 miners were trapped with the flooding of the Chas Nala Colliery. The dewatering operation in January revealed no survivors. Apart from the relief arrangements made for the families of those who were killed in the disaster, there is need to ensure safety of mine operations in the country and regulate the conditions of work of the miners. During the first nine months of the year, coal production increased by 15 per cent compared to last year, with the certainty of achieving the 98 million tonnes target. As a consequence, stocks of coal at pit-heads reached 8 million tonnes in January 1976 against 5.8 million tonnes in January 1975. This points to the need to improve the offtake arrangements, as the annual increased targets of 12 million tonnes are attained. For this both marketting arrangements and prices should be reviewed in order to offer firms and other consumers an incentive to use increasingly low grade coal.

Ore, Copper and Aluminium : With the international recession in world steel production continuing in 1975 and the reduction in Australian and Brazilian ore prices to meet this situation of a 15 per cent cut in world steel production, the country has had to face the question of its production of ore and export of the mineral. For the present the reduced MMTC export target of 12 million tonnes is being maintained. In bilateral discussions with France during the French Prime Minister's visit in January, the possibility of exporting ore to France was explored. The international market is dull and the fuller use of iron ore within the country need to be the area of concentration. As far as copper is concerned, during the first nine months, April-December 1975, copper production increased by 73 per cent at 14,780 tonnes compared to 8,561 tonnes in the previous year. Wire bar production also increased by 62 per cent, with a similar good record of ore milling and the copper content in the concentrates of Hindustan copper. With regard to aluminium, the production of 2 lakh tonnes per annum against a large bauxite deposit of 1,400 million tonnes (of which only 200 million tonnes have been proved) is now the subject of long term planning. At the request of the government, Bharat Aluminium with MECON have developed a plan gradually to expand production to 3.5 lakh tonnes in 1979, 8 lakh tonnes in 1989 and 1.1 million tonnes in 2000 at a total cost over the 24 years of Rs. 4,300 crores, involving provision of 3,000 MW of power to the industry at that time.

Sugar and Textiles : The international sugar estimates show a decline in both world supply and demand—supply from 84.0 million tonnes to 82.6 million tonnes and demand from 82 million tonnes to 78 million tonnes. Hence sugar prices are likely to fall and certainly not rise, to which reference will be made later under the Exports section. Meanwhile the government's incentive package to new sugar factories outlined in the last issue (p 81) will cost the exchequer Rs. 990 crores—Rs. 577 crores as concessional excise and Rs. 413 crores for additional free entitlements. There was a spill over from the Fourth Plan of 46 new units to the Fifth Plan and 56 new units licensed in the Fifth Plan making a total of 102 units which will benefit from these concessions. The capital outlay of these new units amount to Rs. 714 crores for which the government incentives of Rs. 990 are somewhat large. Equally there is need to divert part of these incentives to the existing units which will be supplying 65 per cent of levy sugar at

controlled prices. Finally there is need also to ensure full utilisation of the existing capacity of 57 lakh tonnes against which only 48 lakh tonnes were produced in 1974-75 (see last issue p 81). On the textile front, Maharashtra reports a decline in its cotton crop by nearly 43 per cent, from 17.5 lakh bales in 1974-75 to 10 lakh bales in 1975-76—due to late sowings and excessive rains. This decline may relieve the cotton glut somewhat. In contrast to the critical assessment of the textile industry of the World Bank team referred to in the last issue p 82, with particular emphasis on the fact that the industry has access to all the machinery it needs from purely local sources, that it has not used the opportunity, resulting in "an abysmally low technical performance both in quantity and quality," the same team recommends a 12 fold increase in the manufacturing capacity of polyester fibres from the present 25,000 tonnes to 3 lakh tonnes per annum by the end of the decade. Similarly it recommends expanding viscose staple fibre production to 3 lakh tonnes by 1980. This would meet both internal demand and the fast growing external market.

Fertilisers: For the first 9 months, April to December 1975, nitrogenous fertiliser production increased by 30 per cent at 1.06 million tonnes compared to that period in 1974, with the good possibility that the year's target of 1.5 million tonnes will be attained, due mainly to regular power supply, good management and peaceful labour relations. Against the present capacity of 2.46 million tonnes, including Tuticorin (25,800 tonnes) and Gorakhpur (51,000 tonnes), when by March, Mangalore, Barauni and Namrup are commissioned with a 15,000 tonnes capacity each, the total installed capacity for production of nitrogen fertilisers will be 2.98 million tonnes. The problem of providing the farmer with cheap fertilisers is an important issue. On the one hand with the expansion of irrigation, the consumption of fertilisers is increasing but the individual farmers' consumption—that of the small farmer particularly—is declining. Indigenous nitrogen fertiliser production meets 60 per cent of the country's needs and one way of lowering the price to the farmer is to reduce or abolish the excise duty of 15 per cent on the ex-factory price. The Union government has set up a Fertiliser Prices Committee in January with the Chairman of the Board of Industrial Costs and Prices as Chairman to recommend a fair return on the investments, retention prices for different units, cost of feed stock and a policy for pricing improved fertilisers.

Agricultural Production: The kharif rice crop for the season is estimated at 44 to 45 million tonnes against 42 million tonnes for the previous year. As of early January, 3 million tonnes of rice had been procured or committed to government procurement against the target of 4.635 million tonnes. Haryana had procured 3.04 lakh tonnes and an additional 91,000 tonnes were committed to government procurement, Punjab had procured 8.30 lakh tonnes and had committed for procurement another 2.56 lakh tonnes, UP had committed and procured 5.02 lakh tonnes, Rajasthan 15,000 tonnes against a target of 10,000 tonnes and Kashmir 40,000 tonnes against the 30,000 tonnes target. In the case of wheat at January 5, 40.259 lakh tonnes were procured against the target of 55 lakh tonnes. Coarse grains procurement at that date amounted to 2 lakh tonnes. All over the country cereal prices had declined sharply, only quality grain prices remaining a little above procurement

prices. As of January 25, the government announced that it held a buffer stock of food grains of 8 million tonnes which was to be built up to 11 million tonnes. The major part, that is 8.50 million tonnes, of the stock is to be from internal production, unlike the 1971-72 stock when that amount was imported. There will be import of food grains this year also. Nepal has offered to sell India 50,000 tonnes of rice. Despite lack of late January rains, the Union government expects a good rabi crop which would be 45 million tonnes if there was rains, and 42 million tonnes without it. The estimate is based on the moisture in the ground and the fact that 20 million hectares (compared to the previous year's 19 million hectares) are under rabi wheat, and 7.5 million hectares under rabi gram. 60 per cent of the area under wheat is covered by irrigation which with the power and diesel availability ought to produce full results. As far as fertiliser consumption is concerned, the 25 per cent increase in nitrogenous fertilisers consumption and no decrease in that of phosphates are a further encouraging sign. The National Seeds Corporation is executing its Rs. 120 crores project, setting up 8 State Seeds Corporations for producing HYV food grain seeds. FCI is increasing its storage space by 6.35 lakh tonnes both on a permanent pucca construction basis and temporary cover and plinth basis, the latter in dry States like Punjab, Haryana, MP and the Southern States. The import and distribution of imported grains are to be financed by Banks instead of the budget, which means bank credit to FCI will increase from Rs. 800 crores in January to Rs. 1,200 crores in January - July. Our sea ports will have to be readied to handle this large import. To assist small and marginal farmers and agricultural labourers two schemes at a cost of Rs. 70 crores for cross breeding calves (23 districts), for poultry (18 districts), piggery (21 districts) and sheep production (40 districts) are being operated in MP, Haryana, Karnataka and Meghalaya, Tripura, Nagaland and Manipur. A five point plan is being executed by the Union government for optimising the use of the country's water resources which with a rainfall of 3,440 thousand million cubic metres and allowing for surface run off, amounts to 941 thousand million cubic metres of surface and sub-surface water. This can irrigate 72 million hectares through surface and 35 million hectares through ground water. In 1951, 16.1 million hectares were irrigated by surface and 6.5 million hectares by underground water using 139 thousand million cubic metres. By 1974 at the end of the Fourth Five-Year Plan through 383 major and minor irrigation projects and a large number of small irrigation projects, 241 thousand million cubic metres of surface and 105 thousand million cubic metres of underground water was being used—which will increase to 298 thousand million surface and 135 thousand million cubic metres of underground water by the end of the Fifth Plan. There are 2 problems now. One is technical planning and the other is overall planning and administration. With this vast water resource, there is need for ensuring a sustained programme of command area development, the modernisation of the canal system, economy in water use and training in water use and management so that double and triple cropping practices grow in these irrigated areas. The other problem is that in operating these important and large schemes as well as the Fifth Plan measures to attain the target of 140 million tonnes through HYV areas expansion, increased minor irrigation and command area development, better

sowing pattern, introduction of dry farming technology, strengthening quality seeds distribution and optimum use of fertilisers as well as farmers training and provision of credit, the warning of the Public Accounts Committee (PAC) of Lok Sabha which substantiates the comments of this Bulletin (see Vol II No. 12 p 17 and Vol III p 19 and 633) should be borne in mind. The Committee concludes that the Rs. 250 crores crash agricultural programme in 1972-73 was hastily formulated, patchily implemented, and belied government expectations. The "panic measures" decided in August 1972 made unrealistically optimistic estimates of the wheat increase which was to be 37 per cent, rice increases of 114 per cent and pulses increases of 40 per cent, when the previous 3 year trend increases were between 7.7 to 18.6 per cent. 25 per cent of increase was expected from the drought stricken States of AP, Karnataka, Maharashtra and Rajasthan and there were no arrangements for fertilisers supply and distribution of HYV seeds and above all the power constraints on which 75 per cent of the increase depended were ignored. This severe indictment of PAC concludes "it is incomprehensible how government could have, without adequate preparation, considered feasible such an over ambitious task, particularly in view of severity of the constraints involved." Here is useful guidance for our agricultural planning for the present and future.

Exports : Exports during the first nine months, April-November, of 1975-76 amounted to Rs, 2,348.6 crores, being 15.8 per cent higher than in the previous year's 9 month period. During the period, imports were Rs. 3,445.4 being 33.6 per cent higher than the April-November 1974-75 deficit, making the trade deficit for the first nine months Rs. 1,097 crores as against the deficit of Rs. 550 crores in the first nine months of 1974-75. The forecast in the last issue (p 84) that if this trend continues, the 1975-76 deficit will be much higher than the Rs. 1,096 crores in 1974-75 is becoming a fact. The growing trade gap for the year is also accompanied by worsening of the terms of trade. While import prices have risen by 6-8 per cent, exports realisations have fallen by 5-6 per cent, involving continuing excess payments for imports. The average monthly exports have been Rs. 290 crores, and average monthly imports Rs. 430 crores, and the average monthly deficit Rs. 137 crores compared to the previous year's Rs. 68 crores. The relative fall in exports earning (compared to the 30.9 per cent increase recorded in 1974-75) is due to a reduced unit realisation of exports of sugar, cotton yarn, cotton piece goods, groundnut extraction and basic chemicals and a decline in overseas demand for jute manufactures, cotton textile and oil cakes. The good exports performers are: engineering goods which increased by Rs. 215 crores by December 31, with another Rs. 140 crores of orders on hand for execution by March 31 and a further effort of Rs. 80 crores needed to reach the target of Rs. 400 crores : (for 1976-77 the target is Rs. 430 crores, which with the various fiscal and other incentives given by the government should be attained): marine products are also performing well having earned Rs. 84.01 crores during January-October 1975, with shrimps accounting for 90 per cent of the exports: silk goods exports earned Rs. 11.11 crores during April-November compared to Rs. 8.65 crores in that period in 1974-75, and 80 million sq. yards of handlooms, ready made and hosiery garments are being exported to the US: steel exports are picking up as noted earlier and by December end 1.3 million tonnes earning Rs. 201

crores had been accepted for export: tea and iron-ore are also doing well. The poor performers, as noted include, jute goods where earnings have declined from Rs. 119.38 crores in July-October 1974 to Rs. 67.95 crores in July-October 1975. The efforts to boost exports include the government's release of 1.5 lakh tonnes of sugar for export in January, the extension of the special scheme of cash compensatory support introduced in October for a number of export products to continue beyond March (see Vol V p 663), and advances from Banks against the duty draw back entitlements of exporters as certified by the customs. Trade agreements signed with France and Netherlands in January with wider repercussions for the EEC market also offer hope of export expansion. In this context, the accord for the increase from 30,000 tonnes in 1975 to 38,000 tonnes in 1976 of the export of unmanufactured tobacco under GSP to the EEC area together with a reduction in the import duty from 11.5 to 10.5 per cent is heartening. The Indo-French, Indo-Netherlands, Indo-German and Indo-Tanzanian agreements signed in January should further expand India's foreign trade and support her foreign exchange needs.

Aid : Foreign aid utilisation has improved in 1975-76 at Rs. 1,600 crores compared to the 1974-75 use of Rs. 1,202 crores. Allowing for Rs. 700 crores for debt servicing, the net utilisation of foreign aid in 1975-76 will have been Rs. 900 crores. This higher aid use is due to drawing on the IMF oil facility and other bilateral, particularly OPEC countries, credits. For 1975-76 the mounting trade deficit amounting to Rs. 1,100 crores by end November is being financed by the new credits and drawing on aid in the pipe line. But all this means that the country is far away from the Plan objective of trying to reach zero net foreign aid by the end of the Fifth Plan. In January, India and Kuwait signed an agreement under which Kuwait will give a Rs. 45 crores loan at 4 per cent interest repayable in 25 years including a five year moratorium for the giant Kalinadi hydro electric project in Karnataka. India's negotiations with the World Bank included a credit of $ 150 million (Rs. 135 crores) for Nagarjunasagar in Andhra, a credit of $ 105 million to improve capacity utilisation in fertiliser units at Gorakhpur, Durgapur and Trombay through setting up captive generators and $ 150 million from the World Bank's third window. In addition the World Bank's IDA approved a credit of $ 150 million to finance a power transmission project aimed at the eventual development of an integrated power generation and transmission system for the country. The West German government announced in January that the terms of its loans to India will be the same soft terms as that of IDA—zero interest, 0.75 per cent service charge and 30-50 years period of repayment, with a 10 year moratorium. The Indo-French agreement signed in January referred to earlier also provides for quantitative increase and qualitative improvement in French aid, particularly in the areas of new sources of energy railway, petro-chemicals and the steel industry.

International :

Bangla Desh : Bangla Desh's first jute consignment arrived in January which will be Rs. 2.75 crores worth of raw jutes. In return Bangla Desh is planning to import 4-5 lakh tonnes of coal from India. In current negotiations, it was agreed that in 1976 India would import Rs. 3.5 crores worth of fish, 15,000 tonnes of newsprint and 1.75 lakh bales of raw jute. More

serious has been the decline of trade between the 2 countries. Imports into India from Bangla Desh have declined from Rs. 17.05 crores in 1973-74 to Rs. 9.18 crores in 1974-75 and from January-December 1975 only Rs. 90 lakhs. India's exports to Bangla Desh for the 3 years have been Rs. 58.78 crores, Rs. 42.17 crores and Rs. 16.50 crores respectively. *This imbalance must be* corrected.

Pakistan: In January, agreement with Pakistan was reached to export 5,000 tonnes of pig iron and 250 tonnes of bidi leaves. There was also *agreement on the* steps to facilitate and speed up the exchange of *trade information between* the 2 countries through communicating to the concerned agency in the other country, information on tenders and trade *enquiries floated by either country*. Public Sector Agencies are to deal directly with their counterparts in the other country. Future commercial transactions are to be negotiated in coke, coal, automobile components, tyres and tubes, tractor and tractor components, railway materials, iron and steel items, ferro-alloys and chemicals.

World Monetary Reform: The Kingston, Jamaica meeting of the IMF interim committee of *20 on January 8 and 9*, reached agreement on a pack age of measures aimed at *moving towards* a reformed world monetary system: (a) The *money members can borrow from the Fund* was increased by 45 per cent, which *increased the borrowing rights of developing* countries by $3,500 million: (b) A Special Trust Fund was established for States with a per capita income of less than $ 360, the resources of the Fund being fed by sale of IMF gold and member contributions: (c) IMF was *authorised* to use the balance of its gold holdings to increase its resources or provide resources to the less developed countries who *face* serious balance of payments difficulties, *whose deficit this year* is estimated at $ 31 billion. The major achievement of the Kingston meeting is that it changes the rules of the IMF to make it a more flexible agency, legalising the present system of floating exchanges, altering the role of *gold in the international monetary system*, and making SDRs the world's principal reserve asset. But the relief the new system affords to the developing countries is limited, *and for this*, it relies on an appeal it issued to the industrial countries to ensure a sustained rate of economic expansion in the period ahead while continuing to combat inflation. But against the developing countries trade deficit of $ 31 *billion*, the *aid in any form* will amount to no more than $ 11 billion. The third window of the World Bank has only half the $ 1 billion it programmed for, the Euro-currency facilities have declined because of the loan demand in the home (US) *market* and the *priority* given to the more credit worthy LDC borrowers, the primary products market has shrunk and its earnings are on the decline because of their supply situation and the fact that the industrial countries themselves *produce* a major part of these products, and as the IMF director points out that though the Kingston decision will add $ 3,500 million to its resources, it will make available only $ 1,000 million to $ 1,500 million as extra credit to the developing countries. *This is because* of the 4 blocks in which the *credit is granted by* IMF, only the first one is without any conditions, while the other 3 *involve stringent conditions* which the countries are not able to meet. The Trust Fund *itself will start with about* $ 500 billion which is small. The source of *that fund is gold sales* which will be restricted because of the decision that gold

is to remain in the Central Banks system and out of the free market, with the Central Banks not being allowed to purchase the gold but only the Bank for International Settlements for its own sake. This the Bank is not willing to do, and so the Trust Fund does not have a source and the aid to the developing countries a non-starter. At the end of January, IMF announced that its oil facility which remain operative till May 31 has been increased by SDRs 735.5 million as a result of contributions from the Central Banks of West Germany, Belgium, Switzerland, Austria, Norway, Sweden and Oman. Upto the end of 1975, the facility had disbursed SDRs 3 billion to 34 countries, the largest last drawing being by the UK of SDRs one billion in December 1975. Israel and Brazil devalued their currencies in January. Because of the IMF decision to sell gold, the price of gold fell to $ 126 an ounce on January 20. The Kingston agreement will have further impact on the prices of gold.

World Aid: On January 28, thirteen out of the fifteen OPEC countries pledged $ 800 million towards the OPEC Fund for developing countries (see Vol VI p 18). The target of $ one billion was not reached because Ecuador and Indonesia decided not to contribute to the fund and Gabon contributed only $ one million. Iran was the largest contributor with $ 210 million, followed by Saudi Arabia with $ 202 million. On the negative side the Board of Governors of the UN Special Fund to assist the most seriously affected countries (see Vol V p 345) is seriously considering closing down the Fund, because against a contribution target of $ one billion, it has to date received only $ 27 million from 2 countries. Appeals have been made to OECD and OPEC countries for contributions and in light of the response the final decision will be taken. Also on the replenishment of IDA, the US has some reservations and its level of contributions to the IDA replenishment has some uncertainty.

Conference on International Economic Co-operation: *(CIEC)*: To prepare for the meeting of the co-chairmen of CIEC on January 26, 19 developing countries participating in CIEC met in Paris for a week from January 5 and discussed the mandates of the four commissions on energy, raw materials, development and related financial matters. The basic issue at stake is whether the commissions will work in ushering in the New International Economic Order or whether they will merely reform the existing order. The meeting established a list of subjects that the 4 commissions should study. The 10 co-chairmen of the commissions and the conference met on January 26 and examined the list of subjects presented by the group of 19 and reached agreement on some of the subjects proposed. The cleavage between the industrial countries and the developing countries in this forum is as to whether the mandates of the commissions should be fairly fully defined, which the latter group wants or be left to be decided by each commission, which the industrialised countries want. This decision reflects the division over the New International Economic Order. Against this background, the commissions will meet on February 11 to begin detailed negotiations and bargaining between the 2 groups of countries which could be decisive for the development of the developing countries.

World Energy and Steel: The group of 19 of CIEC established the following list of world energy needs: the protection of the purchasing power of energy export earnings including accumulated revenues from oil, conservation of deple-

table resources of energy, problem of energy supplies of developing countries including those relating to balance of payments, transfer of technology, increase of petroleum processing in developing countries to achieve better balance in crude oil exports and petroleum derivatives and security of supplies of energy to developed countries. World steel production in 1975 was 8.2 per cent less at 651.8 million tonnes compared to 709.9 million tonnes in 1974. In West Europe and US, it decreases by 14.2 per cent, and it increased by 5-6 per cent in East Europe, China and North Korea. The USSR with 142 million tonnes (4.3 per cent increase over 1974) ranks first among steel producers followed by US 105.7 million tonnes (19.7 per cent decline), Japan 102.21 million tonnes (12.7 per cent decline), West Germany 40.42 million tonnes (24 per cent decline), China 30 million tonnes (a rise of 11.1 tonnes).

South East Asia Shipping : India is taking the lead in negotiations with Indonesia, Malaysia, Burma, Sri Lanka and Bangla Desh to form a South East Asia Shipping conference, for the countries to get their due share of shipping. Despite the UN code that any 2 trading countries must get 80 per cent share of their trade for their own lines, India and the countries of the region are not getting their share. This can be corrected either through agreement at the International Shipping Conference or by starting of Asian Lines or both. That is the purpose of these moves.

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II Agricultural Development

Paddy :

The estimates of food grains production in the State is 80 lakh tonnes for this year. In the Thanjavur district an estimated 4.34 lakh tonnes were procured during the kuruvai season from the 600 purchase centres. The good samba crop will be harvested towards the end of January from which government plans to purchase 7 to 8 lakh tonnes plus 4 lakh tonnes from the late samba and thaladi harvests that would follow. For the samba season, the government has decided to purchase the entire marketable surplus without imposing any statutory levy on the producers. However the restrictions on the movement of paddy within the State and the ban on operations of private wholesale dealers in the notified areas (see Vol V pp 593-594) will continue. The procurement price for the samba season will be the same as those announced for the kuruvai season including the incentive bonus and the transport charges. As in other States during this season the State government faces the problem of storage of the large harvest. Because all districts except Tirunelveli and Ramanathapuram have a good harvest, it has been difficult to clear the stocks in the Thanjavur area. Temporary storage places were found in some temples and railway yards for the kuruvai crop. For the samba the problem of storage will be intensified, particularly in the case of small farmers who will need

he money immediately from their sales. The Tamil Nadu Civil Supplies Corporation is constructing 50 purchase centres with facilities for storing, drying etc. The Food Corporation of India is also providing portable paddy dryers and grain purifiers. The Coimbatore district is stocking 200 tonnes of rice in 41 panchayat union godowns, to be used in those pockets in the district which are drought affected. (In addition drought relief action in these villages is being taken through rural works, drinking water provision, postponement of co-operative loan repayments and remission of land taxes). What is needed for the State is a marketing plan covering purchasing and procuring points and procedures, drying and storage facilities and movement and marketing of paddy. In the absence of such a plan, ad hoc decisions are forced on the State and the farmers when there is a good crop or when there is a drought. In this connection, the reported decline in the area under paddy cultivation in neighbouring Andhra Pradesh needs to be studied. That government has ordered an investigation into the reasons for the decreasing area under paddy cultivation and the relationship of this phenomena to the marketing arrangements, particularly the fall in paddy prices in the delta districts of Guntur and Krishna. This investigation will be of use to paddy production and development in this State.

SFDA/MFAL :

In addition to the 3 Small Farmers Development Agency functioning since the Fourth Plan in Madurai, South Arcot and Tirunelveli districts with an outlay of Rs. 150 lakhs each, and the 2 Marginal Farmers and Agricultural Labourers Agency in North Arcot and Salem districts on which an outlay of Rs. 100 lakhs each has been sanctioned, the Union government has approved the operation additionally of the new joint SFDA/MFAL projects in the State. Under this decision in January, seven such projects are to be established in seven districts. For each project the outlay will be Rs. 150 lakhs, involving a total expenditure of Rs. 10.5 crores. It is necessary for the State government to undertake a quick assessment of the first five projects, so that the 7 new projects to be launched this year might have improved operational and co-ordination procedures to be of assistance to the small and marginal farmers and the agricultural labourers, whose specific local needs will be ascertained through local surveys.

Fruits :

The State organised an All India Fruits show in January at Rajaji Hall at which 837 exhibits of bananas, guavas and other fruits were shown. The State entered 687 exhibits, the majority (120) being bananas followed by sapotas, papayyas and pineapples. The Fifth Plan provides for an increase in fruit production from 92 lakh tonnes to 102 lakh tonnes for which there should be an expansion of the infrastructure for the intensive development of horticulture. For this year, there has been a decline in the area under banana cultivation due to the drought, the sharp increase in the price of paddy and in the input prices. The Rajaji Hall exhibit needs to be organised in the rural areas to help the spread of horticulture in the farming areas.

Research Results :

One of the fruits which is being improved through research is the custard apple, where the superior varieties in Latin America have been crossed with the Tamil Nadu variety by the Periakulam Research Station of the Tamil Nadu Agricultural University. The resulting hybrid fruit has a low seed content (15 against 54 in

the local variety), weighs 450 gms each, has a good flavour and soluble solids content and can be grown easily in the State. Another area of research which has produced results is oil seeds. The increase in productivity of safflower from planned irrigation has been established in various trial in different soils—four times watering for light soils, three times on black soils and twice for terraced areas—which increases the seeds by more than 20 quintals per hectare. Further the cakes resulting from oil extraction from safflower, sunflower, mustard and rape seeds can be used as poultry feed, both to replace cereals and millets whose price is now so high, and increase the weight of the birds. While the use of the costly groundnut cake for protein intake is necessary, its quantity can be reduced by at least 25 per cent by replacing it with the other oil seed cakes. Similarly research on cashew trees by the Kerala Agricultural University at its Mallapuram Station has resulted in developing 3 high yielding hybrid trees—H-17, H-3-13, H-3-17 which increases the cashew yield per tree from 2.8 kg. to 20 kg. Kerala University has also demonstrated that the use of organic material such as coconut cake, groundnut cake, saw dust, molasses, neem leaves, cashew leaves and shells and paddy straw as manure for growing vegetables not only increases the crops but also acts as a form of nematode control. For paddy growing, in areas of both assured rain fall and semi dry areas, direct seeding instead of the laborious transplantation can be used, provided the areas that accompany such cultivation are kept under control by the use of appropriate pesticides, as demonstrated in various trials. The Agricultural University of Bangalore has demonstrated that with some adjustments in the sowing schedule, even in dry areas in the 4 Southern States, 2 crops can be grown—50 quintals ragi and 5 to 10 quintals of cow peas every year. The cow peas crop can be sown in the South West Monsoon (May/June) and harvested in 85 to 90 days (August/September). Meanwhile a nursery of ragi can be raised and transplanted in the main field immediately after the cow peas are harvested. Alternately 2 short duration ragis can be raised, along with small fertiliser doses. The university has developed new Indo-African hybrid varieties of ragi which increase the yield by 250 per cent under irrigation. The most popular variety with the farmers is Indaf-3 which gives a return of Rs. 700 per hectare of dry land. The Tamil Nadu Agricultural University released in January five vegetable varieties. CO-3 is a high yielding black gram (1,000 kg. under irrigated and 480 kg. under dry per hectare) which is medium duration, (85 days), drought resistant and can be grown under both irrigated and dry conditions. CO-3 a green gram is short duration (65-75 days) and a high yielder (680 kg. per hectare) being 29 per cent over CO-2. CO-1 snakegourd is shorter duration, high yielding (18,300 per hectare, being a 10 per cent increase over local varieties) and can be grown in monsoon and summer seasons in all parts of the State. CO-1 bhendi is a variety with less fibre, more starch and protein of short duration (90 days) and yields 13 to 15 tonnes per hectare. CO-1 tapioca is a high yielder, giving an income of Rs. 2,180 per hectare from a yield of 30 tonnes per hectare. Finally CO-1 is a ribbed gourd with a duration of 125 days compared to 150 days for local varieties giving a 25 per cent increased yield of 14,140 per hectare and can be grown both commercially and in kitchen gardens.

Animal Husbandry and Dairy Farming :

Madras in January also witnessed the 30th All India Livestock and Poultry Show where 500 heads of cattle of different breeds, 200 sheep and goats, 100 pigs and 600 birds from different States were on display. Breeders in this State were learning at first hand some of the advanced breeding techniques and the best breeds from other parts of the country. The show was a great stimulus to the animal husbandry industry in the country. The State government is getting up a modern cross breeding centre at the Hosur Dairy Farm plus a frozen semen net work which will cover rural areas. As part of the project, the Madras Veterinary College is starting a school of Genetics—at a total cost of Rs. 3 crores. "Operation Flood"—the metropolitan milk supply scheme—in Madras, Bombay, Delhi and Calcutta involves 2 million farmers and serves an actual population of 25 millions, with an investment of Rs. 50 crores and producing Rs. 500 crores in products. On the basis of this successful programme, the World Bank is providing a credit of Rs. 40 crores to extend "Operation Flood" to Karnataka, Rajasthan and Madhya Pradesh also, and make animal husbandry a part of the programme to improve the income and living levels of small and marginal farmers.

Tea :

Indian tea production in 1975 was on the whole good, the latter half of the year making up for the 15 million kg. shortfall of the first half of the year of North Indian tea, and with good South India production, the year ended with 50 million kg. over the 1974 production of 493 million kg Exports in quantity declined during the year, but earnings increased by Rs. 10 crores over 1974 to Rs. 225 crores because of higher prices. The prospects for 1976 are similar. North Indian weather is normal and South Indian plantations have had good weather, and report above normal production in January. Sri Lanka and the African countries are also doing normally, the African countries recovering from the effects of last year's drought, so that once more world production for this year may expand by 6 to 8 million kgs. In order to increase exports, the government's grant of cash aid of 10 per cent of the FOB value of instant tea, tea bags and packet tea, duty draw back on aluminium foil etc. referred to in the last issue p 93 should be immediately supplemented by a massive promotional compaign in other countries. On this, the record is poor and the available information depressing. The Tea Board's report of tea production in other countries is out of date — in December 1975, the activities of 1973-74 are reported, and in this report the poor promotional efforts in UK, US, Japan, Germany etc. may be noted. A vigorous and tailored campaign for each country supported by a more self-reliant export programme is needed to boost tea exports from the country. The Union government announced in the January session of the Lok Sabha that it will take over the management of sick gardens and for this purpose will be introducing legislation. As of January 1, 38 tea gardens were closed in Assam, 14 were sick and 175 complained of economic difficulties. The government's criteria for deciding on sick gardens included — a decline in average yield by 25 per cent in the last 3 years, continuous losses during this period and failure to observe statutory obligations. This should be applied fully and fairly in identifying and taking over sick gardens.

Coffee :

Total receipts of coffee during the 1974-75 season were 91,734 tonnes, which was largest production since the bumper crop of 1970-71 (see Vol I No 9 p 10) and higher by 5,780 tonnes over the 1973-74 season. The preliminary estimate for the 1975-76 crop is about the same 92,000 tonnes. World production for 1975-76 was about 9 per cent lower and exports also lower at 53.3 million bags compared to the previous year's 60.4 million bags. India's exports in 1975-76 will be about 58,000 tonnes valued at Rs. 60 crores — being 3,000 tonnes over the 1975-76 allocation of 55,000 tonnes. In addition 300 tonnes of instant coffee valued at Rs. 1.8 crores have been exported to the Soviet Union. As the new International coffee agreement (see last issue p 92) will come into operation from October 1976 and the actual quotas operate from the 1979-80 coffee year, the coffee planters, the government and the exporters must work together to maximise exports in 1976-77 to 1977-78. There is also need for improved consumption of coffee within the country. In fact in 1975-76 there was a decline in internal consumption because of higher prices. Hence the 10 paise point cut in price by the Board should be passed on to the consumers to increase coffee consumption in the country.

Rubber :

Production of natural rubber during the first nine months of 1975 was 92,309 tonnes, an increase of 9,871 tonnes over that of the 1974 period. The revised estimate of rubber production for 1975-76 is put at 1.42 lakh tonnes and that of synthetic rubber at 23,000 tonnes. Consumption however was at lower levels, lower by 3,314 tonnes at 97,064 tonnes for the period January-September 1975, resulting in increased holding of stocks by estates and dealers — by 14,351 tonnes.

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III Industrial Development

Kalpakkam :

The Fast Breeder Reactor Research Centre at Kalpakkam will be commissioned in 1978-79. In the process it will indicate the solutions to a number of problems posed by the disposal of radio active wastes and liquid sodium used to extract heat from the core. The major experiment at Kalpakkam was the employment of uranium as the nuclear fuel element and this called for all the scientific and engineering skills available.

Neyveli :

NLC entered into an agreement with the Fertiliser Corporation of India to execute a fuel oil change over the gasification project for its fertiliser plant in place of lignite. The project will be completed in 36 months at a cost of Rs. 14 crores, of which the World Bank finance will be $ 11 million under the IDA section of the Bank. FCI's planning and development division will execute the agreement using

the process knowhow of steel Research and Benfield Corporation, USA.

BHEL :

BHEL reports that it has received no orders for power equipment from the State Electricity Corporations during the past 12 months, and this delay may seriously hamper the power generation programme of the country. The reasons for this gap are partly the lack of resources with the State Electricity Corporations to place orders, partly bureaucratic, and partly the absence of a long range plan. Before BHEL takes this as the normal situation and proceeds to diversify its programme, the Union and State governments should review the work plans of their Electricity Co-operations, advance the resources, if needed and speed up the placement of orders with BHEL. In another development, BHEL, BARC and DST decided to establish the pilot plant for Magneto Hydro Dynamics (MHD) at BHEL. This project will be a techno-economic feasibility study on MHD and will last 5 years and cost Rs. 7 crores. Thermal efficiency with MHD was 55 per cent of the traditional coal based plant. The Indian problem is, in the absence of natural gas, coal gas as a combustion media has to be used and the efficiency of this medium, its requirement of coal per annum, the plasma State problems—all these have to be studied and the problems solved in launching on an MHD production programme.

ICF and Defence Equipment :

ICF is now manufacturing an improved model of power cars to replace the existing imported ones. The new cars will have 2 engine alternator sets with a total capacity of 250 KW. The large generating capacity enables additional electrical equipment being installed and used in the train such as cooking rank, bottle cooler, refrigerator etc. and this capacity was developed indigenously. On the production of defence equipment, in order to assist prospective manufacturers to see for themselves what is involved, an Ordinance Sample Room (OSR) has been opened at the Ambattur Industrial Estate where mechanical transport stores, electrical and electronic items, engineering spares and general hardware stores and automobile electrical appliances, springs and chemicals are on view, and along side of the items still being imported are on display to indicate to industrialists the lines and areas in which indigenous production and import substitution are urgent.

Textile :

Production of cotton yarn in the 188 mills who form the Southern India Mill Owners Association was down by 13 per cent in November at 1,07,800 bales of 180 kg. each. This was due to the power cut in Karnataka and the continued labour troubles in this State. In fact 9 textile mills were closed down in January in Tamil Nadu—while two, Cauvery Spinning and Weaving have closed down for economic reasons, seven including Madurai Coats units at Madurai, Tuticorin and Ambattur are on strike or under lock out. The textile industry is in a bad way in the State and the cause for the state of industrial unrest, whether it be bonus, retrenchment, lay off, labour rationalisation or disciplinary action is only an indication of the basic recessionary problem faced by the industry. Neither Deepavali nor Pongal brought relief to the mills, despite the rebates and concessions offered to consumers. Some relief is afforded on the export side as the Tamil Nadu and Pondicherry branch of NTC has booked export orders for Rs. 50 lakhs of grey fabrics and handlooms. Now is the

time for the Union government to announce its export incentive package, so that the textile export market, which has a restricted Japanese and Hongkong supply because of the non-availability of yarn, can be served more fully by Tamil Nadu Textiles. The November estimate of the yarn available for the decentralised sector was 87,000 bales, after allowing for composite mills yarn consumption. At the end of November the mills carried a physical stock of 52,893 bales of which 38,781 bales were unsold stock. That is the measure of the recession in this sector in the State.

Cement :

Cement production in the State and the South is picking up and there will be full capacity use this year to meet both the growing internal and the very rapidly expanding external demand. In December 21,000 tonnes of special cement were exported to Iraq and in January 10,000 tonnes to Iraq and 10,000 tonnes to Iran were exported. This is just the start of exploding export market for cement.

Fibre Glass, Life Boat Factory and the Coimbatore Export House :

In late January, the Fibre Glass Life Boat Factory was inaugurated in the Industrial Estate, Guindy which use ferro-cement and fibre-glass making for life boats and whose order book is now quite full. The factory will give rise to other marine ancillary units in the State, and will expand fast because of its proximity to the Madras Port and access to MMD surveyors for survey of the boats. Coimbatore Industries Export House, which is a co-operative venture of many small entreprenures in Coimbatore started a year ago, is doing well on the export front. In October it obtained a Saudi Arabian order for $ 45,000 for agricultural implements and executed it so fast and with quality considerations in mind, that it received a second order for $ 70,000 from the same buyer. Machine tool orders from Australia and Sri Lanka have just been received. 31 entrepreneurs are members of the House producing soaps, chemicals, agricultural tools, machine tools, rubber products, fibre glass products, pumps and motors. The House is rapidly expanding. But more generally these are pointers to the important role of small industries in internal and export trade. The decision of the State Directorate of industry and commerce to assist the publication by SIDCO of a directory on the research, development and design facilities in the State complied by SISI will be of real help to small industries.

Southern Agrifurane :

Southern Agrifurane Industries set up a furfural unit at Mundiyambakkam near Villipuram. The 6,000 tonnes plant at a cost of Rs. 3 crores will use bagasse from near by South India Steel and Sugars. Furfural which possesses a high degree of thermal stability forms a base for the chemical industry and is used in the preparation of nylon, synthetic rubber, in refining vegetable and lubricating oil, for extraction of butadiene etc.

Handloom :

On the handloom front, though it has become part of the 20 point programme, funds for the development of handlooms are being delayed. Within the frame of the overall Rs. 68 crores plan—Rs. 55 crores by the Union government and Rs. 13 crores by the State—for 1976-77, Rs. 20 crores are to be used for the growth and expansion

of handlooms. There should be no second thoughts on this by the Finance Ministry or the Planning Commission and the appointment of the Handloom Commissioner should be speeded to help in the execution of the State Plans which are all ready in the handloom area. The annual target for 1975-76 is Rs. 105 crores which is being surpassed, and so the 1976-77 target has been raised form Rs. 125 crores to Rs. 129 crores composed of handloom fabrics (Rs. 33 crores), cotton handloom made ups (Rs. 13 crores), ready mades (Rs. 65-crores) and non-cotton (Rs. 18 crores). Here again it is urgent that the Union government announce the cash assistance scheme immediately. To start with the cash assistance due to the handloom sector for the period April-December 1974 should be settled first and quickly, to keep the tempo of exports growing in this small but vital field.

Leather :

The Leather Development Corporation is being located in Agra, which is a major centre for the manufacture of shoes for the domestic market. The government's policy is to promote the manufacture of leather goods and increase its consumption within the country. On both counts it is right and it means turning from the past when it was a 100 per cent export oriented industry. Export earnings from leather and leather products during the first nine months of (April-December) 1975-76 was Rs. 132 crores against the previous year's Rs. 120.82 crores. El tanned and wet blue chrome rose to Rs. 88.08 crores (Rs. 84.17 crores last year), and leather goods exports increased by 33 per cent at Rs. 32.48 crores (Rs. 24. 57 crores last year). The trend is right and encouraging. India's exports of leather goods to EEC will receive a spurt as a result of the February visit of the 24 man mission from the 3 major EEC countries which will start its visit in Madras and split into the tanners group going to Calcutta, Patna, Kanpur and New Delhi and the footwear and machinery experts going to Bombay, Delhi, Agra, Kanpur and Calcutta. The purpose of the mission is (a) advise Indian firms on how to meet the requirements of the European Market for both leather and leather goods and (b) look into the possibilities of marketing tie ups and other forms of co-operation. Once more Indian firms will be on trial rightly for the quality of product, the timely delivery or delivery on schedule and based on reasonable investment and where necessary technology transfers. The leather Export Promotion Council has submitted to the World Bank a project costing about Rs. 150 crores for modernising the leather industry and providing such infrastructures as setting up sophisticated machines and ancillaries needed for finished leather. The leather industry is a growth point in the country and can use Bank aid in speeding its growth.

Private Sector Report :

The annual report of Kothari (Madras) for the year ending June 1975 reports some stagnation, diversification through the Rs. 16 crores caustic soda/chlorine/ammonium chloride plant, a slack textile sector, good tea sales and production leading to replanting 150 acres and new plantation over 500 acres and increase in coffee production due to replanting and scientific techniques. Its fertiliser division reports good distributions of nitrogenous fertilisers from 3 major producers and increased sales of NPK mixtures.

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IV Education, Science and Health

Educational Reform :

Following the decision the Madras Corporation to hold a public examination at the end of the V standard for its 18,300 students in that standard as a means of improving learning levels, the government has under consideration setting up a Common Board for examination for the V standard. Primary schools are run by Panchayat Unions, private agencies and a few by the State government. This examination is being thought of as a means of making standards uniformly high. Unless there is improvement in the curriculum and change in the methods of teaching and evaluation, this change will not be a positive step in raising educational standards. As we move into the 10+2+3 pattern, it is possible to discard the present out worn and rigid curricula and replace them by one that conforms to the latest developments in each field and is related to life and productivity demands. If this is not attained by the change over to 10+2+3, that change will be a meaningless form. In fact the State Minister of Education raised the question of the use of the present common SSLC examination covering the whole State and 2.5 lakh students, ignoring all spatial and personnel differences. This leads to deadening and unreal uniformity in questions, irrelevant answers and students selecting a few questions and passing. Also the system of marking and grading has come in for criticism because there is no system of evaluation that can cover adequately mental and intellectual qualities. Andhra Pradesh government has introduced a comprehensive Education Bill into its legislature which provides for a Board for co-ordinating general education, a Board for teacher education, a Board for non-formal education with the Chief Minister as chairman of the Board, an Educational Planning Committee and an Advisory Board for student welfare. The Bill is a departure from normal educational legislation in that it attempts to define educational and pedagogic aspects of curriculum, text books, examinations teachers training, students welfare and participation, non-formal education, teachers' welfare, educational planning, administration and finances. It decentralises educational planning by establishing district educational planning boards, ensures modernising educational administration and provides for the proper regulation of privately managed institutions and the take over of mismanaged institutions. An interesting experiment to watch is the attendance scholarship of Rs. 40 per year given to 16,000 primary and upper primary girls by Andhra Pradesh government as an incentive to them to attend school. 10,000 girls will be in the 6-11 age-group, and 6,000 in the 11-12 age-group and will be selected on the basis of "merit, poverty and promptitude of the school going children". The scheme should be watched to see if the incentive scholarship is any more a sufficent incentive than the midday meals devised by this State for ensuring school attendance. Another good development is the decision of the Bank of India to open 50 pre-primary schools in remote rural areas to help both poor children with education, and provide a means of employing the time and talent of the wives of the bank employees posted to those areas. NCERT is running an important experiment in teaching techniques in elementary schools in which multiple classes are used. In a single teacher school, the whole course up to class V is divided into sequential

units and children are allowed to proceed at their pace. In schools where there are more than one teacher, but where the teacher has to teach more than one class at a time, the technique is development of suitable class room, organisational patterns and restructuring of the curriculum into teaching-learning units. These techniques are being studied and evaluated and updated in light of the 10 year schooling. At the college level, Madhya Pradesh reports on the absence of unrest in educational institutions as one of the side benefits of the present emergency. What MP reports is true of all States: classes are being held, attendance is satisfactory, teaching is normal and teachers prepare schedules and keep diaries. The trouble makers have been a handful who are under arrest or are excluded and the result is the campus peace now prevailing. The Union ministry reports that 1,600 book banks have been opened in colleges with the help of UGC, on the basis of 75 per cent aid from UGC and 25 from the State governments. At the school level 5,000 book banks have been opened so far, and proposals from 50,000 are under study. In late January, the Tamil Nadu Text Book Society released 100 college text books which made of a total 700 college text books in Tamil. It reported that while Rs. 25.7 lakh books were sold, Rs. 49 lakh worth of college text books were lying unsold. The government has therefore decided to give 50 per cent of book allowance (Rs. 50 for a PUC student and Rs. 150 for a degree student) in books to close this gap. This lack of desire to buy and read books goes deep. In standards VII and VIII out of the 8 lakh books printed covering the new enriched syllabus, only 4.25 lakh books had been sold. There was no chance of students buying at second hand these books, because they were issued for the first time this year. There is need for the creation of a desire for learning and reading among the educated.

Technical Education :

The Regional Engineering College, Tiruchi, brought together the Tiruchi chapter of the Institution of Engineers and the Regional Committee on R and D in Small Industries and inaugurated the Engineering Consultancy Service in order to make available engineering expertise to the firms to ensure the outflow of engineering research results into industry. The Chairman of BHEL has suggested that the Principal in collaboration with BHEL introduce sandwich courses on "business development" and "management development" for 9 to 12 months period each so that the 900 executives of BHEL could be trained in modern management practices. The Tamil Nadu government has asked the Union government to start an Institute of Marine Engineers in Madras to meet the shortage of technically qualified engineers for the shipping services. Also from June 1976, the students of Madras Medical College will have the facility of watching surgical operation on the closed circuit TV screen. Thus TV will be used in the hospital for teaching purposes and should be gradually expanded to cover as many subjects as possible. The Jawaharlal Nehru Technogical University, Hyderabad decided in January to set up a School of Continuing Education, starting with courses in Master of Business Administration and Industrial Engineering to be developed into a more comprehensive and diversified programme. One other neighbouring State, Karnataka, has set up a Vocational Education Board to vocationalise school and college education from the next academic year.

SITE and Satellite :

One lesson of SITE is that young people can do any job speedily and well if trusted and given responsibility. This was the evidence furnished at the Science Congress by the Director, Space Application Centre, Ahmedabad, on the basis of the record of work of the SITE scientists and technologists who are in their twenties. The Union government has invited through the UN thirteen countries to attend a winter school which will examine how India planned and implemented the SITE programme as an instrument of rural development. This in-depth study of our experience in using community television programmes for accelerating national development is of interest to all Third World countries and through the winter school starting on January 15, with a week at Ahmedabad, 2 days at a rural centre and 3 days at Delhi, India will be sharing her experience with these countries. The Director of ISRO has also reported that an Indian made communication satellite will be ready and orbited by the French launch vehicle in 1980. In the meanwhile a small satellite called Rohini will be utilised on an Indian launch vehicle for technological experiments. The first such satellite will be launched in 1978.

Science :

January witnessed a series of important science meetings. The 63rd session of the Indian Science Congress was held in Vishakapatnam from January 3 and for the first time it was concerned with a theme of national importance—Science and Integrated Rural Development. Inaugurated as usual by the Prime Minister who called for science giving itself a rural bias and asked a question as to the proportion of money spent on irrelevant—social or intellectual—research and the President Dr. Swaminathan's call for using science in rural development, the Congress decisions included (a) a call to government to develop blue prints for scientific rural-urban development, (b) the setting up of scientific and administrative consortia for each block and town, (c) a movement for ecological regeneration and a plan for planting half a million trees by University staff and students during the South West Monsoon, (d) universities, IITs and IIMs should set up consortia to plan and organise villages research and development centres for appropriate technology and (e) a national co-ordinating body to be set up to stimulate and encourage voluntary agencies to take science to the villages. The need for R and D on bullock carts was stressed at the Congress, noting that to date over 300 design establishments and 30,000 engineering teachers have paid it no attention. There are 13 million animal drawn vehicles, with an aggregate investment of Rs. 3,000 crores in them—an amount almost equal to our investment in railways—carrying about 10,000 million tonnes and employing 20 million people. The conventional cart is inefficient, its carrying capacity and speed reduced because of its defective design, and work is needed to improve its harnessing so that it pulls the load and not bear it, to develop a breaking device, to deal with problems of pneumatic tyres, and above all to work on the problem of cost reduction. The Karnataka Institute of Applied Agricultural Research put on operation at the end of January new carts with ball bearing and improved load capacity and speed enabling its owners to earn Rs. 20 a day. A second important scientific meeting was the International Pugwash conference opening on January 13 at Taj Coromondel in Madras and inaugurated by the Prime Minister emphasising the importance of curbing the arms race and understanding the development efforts of the Third World. The conference in a

weeks' deliberations agreed on the need to curb the activities of multinational corporations which control completely the world's non-renewable resources, the need to develop greater parity of exchanges between the industrial and third world countries, and called on the governments to reduce and halt the arms trade and place a ban on new nuclear weapons systems and the development and production of all other weapons of mass destruction. On pollution, the State Fisheries Department is undertaking a study for UNESCO on the extent of pollution in the Cauvery river system, which will also be of practical use for fishery development in the State. On the industrial front a 2 day entrepreneurs get together at the end of January brought together the IIT, the Indian Bank, NRDC and CSIR, as a means of opening channels between technically qualified persons and industrialists on the one hand and scientists from research institutions and the NRDC and bankers on the other. This will commercialise our developing technology. Again FCI and CSIR are undertaking research in improving the quality of rice bran for edible oil extraction. As 60 per cent of the country paddy is parboiled bran, there is an adequate amount available for improved oil extraction. Further design experts at the railway organisation at Lucknow are engaged in changing the entire design of locomotive power equipment in order to optimise the system design. Another development is that radio tracer studies have been used for the first time in the country to improve the yield rate of oil from Oil India reservoirs as a result of collaboration research between ONGC and BARC. Also CWPS reports that its 1954 commissioned ship model testing tank has so far tested 170 ship models and 70 propeller models and has saved the country $5.3 million in foreign exchange costs.

Health :

A number of voluntary agencies headed by the Guild of Service ran a mass medical campaign at Mangalapuram and Chengulput in mid January covering about 30,000 men, women and children. Apart from providing immunisation and other injections and medicines as a result of the check, the individuals were registered and referred to specialists as necessary. Hidden cases of leprosy and VD were brought to light and treated. A special nutrition programme for 1.4 lakh mothers and children in the Madras city was also launched in mid January, by the State Social Welfare Department and the Corporation of Madras with a view to providing an integrated package of health, nutrition, health education and family planning to expectant and nursing mothers and pre-school children. The scheme is executed through 48 child welfare centres and is also using vitamin enriched Rava, known as "Balahar". In order to encourage doctors to work in rural dispensaries, the government raised the rate of subsidy of rural medical practitioners from early January. In order to push family planning, the City Corporation's mass campaign is being extended again from February. It is also extending its camp to the Central Jail and offering as an incentive to those who undergo vasectomy operations remission of the terms of imprisonment ranging from 15 days to one year according to the sentence. Also a committee of businessmen and industrialists has been formed in the State to finance and promote family planning. The State government reports that the number of legal abortions in the State trebled from 4,327 in 1972-73 to 7,173 in 1973-74 and to 12,618 in 1974-75 since the inception of the Act. But illegal abortions are still 50,000 a year resulting in 500 deaths. There is need for a campaign to educate the public with regard to the MTF Act. At the All India level,

the Prime Minister while inaugurating the 31st annual Conference of Physicians stated that there will have to be "drastic steps" taken to bring down the birth rate, and if this means giving up some personal rights they should be in order to preserve the right to life and decent life of the community, she said. The Union Health Minister also speaking in Bombay used the same phrase, the need for "drastic steps", to break the menace of our rising population and said if the voluntary control programmes are failing, compulsory measures will be taken. Now the government must act and should do so in February which it has designated as the Family Planning Month. In this connection the anti-pregnancy vaccine made at AIMS, New Delhi should be released for mass trial in that month or soon after. The best performance in Family Planning in 1974-75 goes to Haryana followed by Gujarat (second) and Tamil Nadu (third). The total rural health programme will be helped with the facility of doctors to be stationed in selected petrol pumps of the Hindustan Petroleum Corporation. A qualified doctor will at the pump attend to rural patients free or on payment of a small fee.

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V Employment

In 1975, 17.9 million mandays were lost due to strikes, lock-outs etc. compared to 40.3 million mandays lost in 1974—a direct gain of the emergency. Similarly during the emergency July-December the number of work stoppages declined from 1,421 in 1974 to 402 in 1975. But there is a disturbing trend of increasing lock-outs and lay-offs in the private sector. In fact out of the 17.9 million mandays lost in 1975, the Union government reports that as much as 16.5 million were in the private sector. Hence national tripartite committee have been set up to develop a harmonious and productive climate in this sector. Also the government is thinking of bringing in legislation to ban such lay offs by private management. State Ministers of Labour meeting with the Union minister in January established a time table and a plan for abolishing bonded labour, how they will be identified and how they will be freed and provided with alternative gainful employment. The extension of all India services to Engineers, Education and Medical and Health services is still under debate. A number of important States including Tamil Nadu have opposed this extension scheme mainly on the grounds of cost and the lack of local interest on the part of the officers. Any system of reservation to particular States in these all India services will defeat the main purpose of the scheme. It seems wise to defer the scheme until our priorities can allow us to enter this area. With regard to the distribution of candidates who sit for the UPSC exam by Universities, Madras University occupied in 1972 the third place with 421 candidates appearing for the UPSC exam after Punjab (930) and Delhi (841).

VI Other Items

Radiology :

The 23rd Annual Conference of Radiology was the occasion for a one day educational seminar for post-graduate diploma students in radiology. The issue raised at the seminar related to questions of specialisation versus integration in the training programme, and the urgent need to develop a minimum of research in this somewhat arid field—costs are not a sufficient reason for the neglect of research in this area.

Association of Indian Universities :

The 51st conference of the Association of Indian Universities was held from January 11 to 13 at S. V. University at Tirupathi. The conference discussed two main issues—the 10+2+3 system as it affects the universities and the switchover to ths grading system. On neither point was there much progress nor was much said that has not been said in other forums. It was agreed by most of the Vice-Chancellors present that the grading system of marking will be introduced from the next academic year for the post-graduate programmes. For the next year Dr. S. N. Sen, Vice-Chancellor of Calcutta University was elected Chairman.

Indian University Association of Continuing Education ;

At the annual meeting of the Association of Continuing Education at Tirupathi, the lack of activities of the Association. its poor programme sense and record were criticised and a new set of officers with the Vice-Chancellor of Madras University as the Chairman of the Association were elected. It is now for the association to come alive and meet tbe needs of the country for all forms of continuing, adult and non-formal education.

Pugwash :

The 21st International Pugwash conference referred to earlier had a unique feature on this occasion. The Indian President had invited the best artists—painters and sculptors—of the country to produce a piece of art for the conference. The result was a most impressive set of 20 paintings and sculptures by some of India's outstanding artists who gave expression to the anti-nuclear war emphasis of Pugwash. It was an impressive synthesis of science and art—a synthesis in the form of interactions which future meetings should continue and conserve.

Loyola College :

Loyola college celebrated in January its Golden Jubilee Anniversary. It was an occasion when its past achievements were reviewed with both thanks and as a means ef gleaning hints for the future. Also the future of the college as an autonomous college was discussed and some of the main lines of future progress in terms of goals and objectives were elaborated.

Board of Continuing Education :

The Board of Continuing Education had a meeting of its Executive Committee and a meeting of the General Council in January. At both meetings, the work of the Board over the past six months was reviewed—notably the work on the school dropouts projects, the prepraions for

launching a second project, the report on non-formal education, and the voluntary agency projects in this area. The finances of the Board continue to be slender and in this there needs to be further action.

AASSREC :

The first conference of the Association of Asian Social Science Research Councils (AASSREC) following the 1976 founding conference at Simla was held at the University of Teheran, Teheran from January 21-25. At the conference the social science teaching and research situation in Asia were reviewed and the conclusion was reached that there was need for the development of an Asian social science tradition and that we should cease our dependence on western borrowed models. The conference adopted the constitution of AASSREC which at this meeting was formulated by Iran, ndia, Sri Lanka, Pakistan, Thailand, South Korea, Philippines and Nepal. The conference also adopted guidelines for formulating its programme and budget at its next session in Korea in January 1978, and decided immediately to launch an exchange of information programme to be financed by the ICSSR in the form of abstracts and the Korean Council in the form of a News-letter.

Presidency College :

The chemistry department of the Presidency college celebrated its 100th year on January 25. On that occasion, the example set by its pioneers in hard and industrious work compared to the restriction of the college and university work for 180 days at present, in the integral view of science wherein one man was able to teach physics, chemistry, physiology and botany, and in the outdrstanding teaching and research reco accomplished was recalled. The research tradition has been kept up in the college and with the grant of autonomy all departments of the college should develop towards high levels of excellence.

Vivekananda Anniversary :

Swami Vivekananda's birth anniversary was celebrated the same week in a number of functions. At a public function his practical, religious and philosophical outlook was recalled along with the contribution he made to political and spiritual development in this country and in the world. In this context, a number of questions were addressed to Vivekananda as if he were alive, which he is, and his guidence sought—on our poverty and growing inequalities, on our continuing strife and wars both internally and internationally, on our growing selfishnes and loss of a sense of community and neighbourliness.

Rotary and Lions:

The monthly meeting of the Central Rotary Club and the Nanganallur Lions' Club were the occasion for a review of the State of the economy—Indian and International. Against the grand objectives and attractive targets of the New International Economic Order and the Fifth Five Year Plan—the secular stagnation of the third world and the Indian economies, and the falling per capita income of the Indian Economy during the seventies were highlighted. There are some bright spots—a good harvest this year, control of inflation and a sound industrial infrastructure. These should be used to break the agriculture, Industrial, fiscal monetary, saving and disinvestment causes of stagnation and deficits in the balance of payments that the economy faces.

NCC and NSS :

In early January a fortnight's training programme for NCC women cadets at Queen Mary's college was concluded. At the concluding function the larger national purpose and the specific individual contribution of the NCC programme was recalled and the hope was expressed that once more the State unit of the women's cadre would win the all India competition. At the end of January, the advisory committee of NSS met and decided on the programme for 1976 which apart from the compaigns would include a non-formal education programme in which all students can participate, participation in rural co-operatives for commerce students and in electric and machine repair and service for engineering and science students. It was noted under the internal assessment students, 100 marks were set aside for the community and social service done by the students.

Andhra Mahila Sabha :

The Administrative Committee of the Nursing Home met in January and in view of the Union government's decision to reduce the Auxiliary Nurses training scheme, took a number of decisions to reduce the staffing of the Nursing Home's training scheme. It also welcomed the prospect of Dr. Mrs. Nayudamma returning to look after the Home and become its superintendent. It decided to postpone the proposal for Hon. consultants using the Nursing Home till the superintendent is in position.

University Events :

The syndicate committee on affiliated colleges met twice to deal with disciplinary problems and the Rs. one crore UGC development grant for metropolitan colleges. The committee on affiliation, recognition and inspection examined the 130 requests for affiliations and made recommendations on them; the conveners committee and the finance committee examined and approved the Financial Estimates for 1976-77 the audited accounts for 1974-75 and the annual report for 1975 for presentation to the syndicate; the Boards of studies met and established the semester pattern for B.A., B. Sc., B. Com. for a selected number of colleges and also for M.A., the syndicate committee on curriculam and examination reform met and approved the change over from numerical marking of the external examination results to a system of grading; the conveners of the schools and the Inter-Departmental Committee met to deal with current university matters; and the Syndicate met in January and decided on a number of academic, procedural and administration matters.

Special Seminar :

The eighth session of the special seminar on 'Educational Development in Tamil Nadu' was held on Friday February 27 when Mr. C. T. Kurien's paper, 'Education as a force for status quo or social change in Tamil Nadu', was discussed. There was agreement that at present the education system acts as a force for status quo and that there is need for basic reforms for it to become a positive for social change and progress. The major such needed structural changes as listed in the paper were discussed and agreed.

February Seminar :

At the February Development Seminar held on Friday 26, in the seminar room of the Institute, Dr. V. Shanmugasundaram presented the paper by Mrs. Barbara Harriss,

Market Integration/Government Trading in paddy in North Arcot, and the paper together with a summary of the discussion of it at the seminar appears as the first article.

Second Article :

A paper, 'Economic Trends in Tamil Nadu' appears as the second article.

Book Review :

A review by Mr. V. Rengarajan, of the Plan for Khadi and Village Industries, East Ramanathapuram Development District and a review by Dr. M. Srinivasan of Messrs K. Chopra and G. S. Swamy's book on Pulses appear in the Book Review section. Both reviewers are Research Officers of the Institute.

Market Integration and the Effects of Government Trading in Paddy and Rice, North Arcot District, Tamil Nadu

By

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Presented by

Dr. V. SHANMUGASUNDARAM.

From time to time in India studies of the pricing efficiency of the foodgrains trade have indicated whether or not combinations from government's wide ranging but costly armoury of policies designed to control abuses in the private sector and assure reasonably priced supplies of foodgrains, are necessary. Generally it has been concluded that they are not (Cummings, 1967; Lele, 1971). No apology is therefore needed for a further study of the performance of the paddy and rice trade over the last few years during which time food grains policy at Union and State level has been changing but throughout which the State Government has intermittently operated movement restrictions, stock controls, fixed retail ceilings, and has provided rice to vulnerables by means of a variable levy of rice at fixed prices from producers or traders. The major pricing research of Lele (1971) broadly proving the competitiveness of the private foodgrains market used data for one market in each of Chingleput, South Arcot, Thanjavur, Tiruchirapalli and Tirunelveli Districts before 1965 so it may be additionally useful to monitor more recent market behaviour in several markets in North Arcot, a district to which not a great deal of research attention has hitherto been paid.

This article presents the preliminary results of an inquiry into four aspects of market structure. Firstly it investigates the homogeneity of the paddy and rice market. At least 24 varieties of paddy and rice are cultivated in North Arcot District (Chinnappa, 1976). If the market is competitive, in any one town we may expect price movements between different forms of the same variety to be closely related; as will be movements of the same forms of different varieties if the market is homegeneous. In producer market towns price behaviour may not be homegeneous but it still may be competitive; we may set this latter situation up as a hypothesis for North Arcot District whose eastern taluks export paddy and rice and where kichili samba (GEB 24) is cultivated once a year but marketed as fine or superfine raw and parboiled rice on long distance trading

routes to urban final destinations while parboiled and boiled coarser varieties are grown and marketed in all three seasons. The significance of this cropping and trading pattern is that traders attempt to pay Government levies in the cheapest types of paddy and rice and they claim that price formation for kichili is unaffected by the supply of and demand for coarse varieties; that when they make a loss on paddy or rice sold to Government, a compensating hoist is added to the wholesale price of rice, which affects the luxury rice the least and inferior varieties relatively the most (Harriss 1976).

Secondly it investigates the degree of regional interconnectedness of prices at a macro or inter market level since Cummings (1967), Lele (1971) and Timmer (1974) have found by correlation analysis, close interregional relationships. These they have interpreted as resulting from the free flow of price information and of physical commodities, and as indicating the degree of perfection of competition. If this trade is efficiently managed then Governments must be according ideological issues high priority when they invest capital and manpower to imitate or duplicate existing services.

Thirdly the data to be used covers a period of rising paddy and rice prices, not only because of inflation but also because of drought and commodity scarcities. We can therefore test the hypothesis that as scarcity conditions worsen, not only does the range of prices for the spectrum of varieties narrow (as shown in Chinnappa and in Harriss 1976) but also the market becomes more closely integrated between varieties and places.

Lastly, and most importantly, we can investigate the "Cummings-Lele" hypothesis that markets are better integrated between forms, varieties and places in times of free trade, least well integrated (because of individual reactions to uncertainty) about the times of change in Government policy. The implications of this are that Government should minimise either its level of interfernces or its changes of policy. A rider to this hypothesis is that the effects of Government levies will be most marked in the varieties in which the levies are made. The effect of the partial levy on the residual free market is well known. It is important to examine it because, since Government usually undertakes to supply only the poorest and/or urban sector with rice, the free market is still the mechanism by which all but the most "vulnerable" urban and many truly vulnerable rural people obtain rice. It is surely reasonable to try to find how it is distorted and ways of minimising those possible distortions.

Method and Data:

The method by which such issues are examined here is by zero order correlations between price series. A value of 100 indicates a perfect linear relationship between prices, price margins kept constant by the continual adjustment of commodity flows, and therefore conventionally perfect competition. Interregional correlation co-efficients will generally be less than 1.00 because price differences between markets have to exceed both transport cost and the risks of transport in an environment of changing prices before trade takes place. Imperfect knowledge of the current and future supply situation and the non-homogeneity of the commodity itself (variations in quality generally being sensitively reflected in free market

prices) also act to reduce the value of the correlation co-efficient. By itself the correlation co-efficient cannot prove market integration. But market integration and competitiveness proved by analysis of margins, is generally associated with high correlation co-efficients. Blyn suggests that partial correlation co-efficients controlling statistically for time trends (due to rising demand through population growth affecting a whole region) and seasonal price variations (since they reflect a common supply pattern) should be used (1973). In this case the time period is only 2 years and rising demand a very small determinant of prices; and seasonal price variations occur in different months in different parts of Tamil Nadu and would be exceedingly difficult to eliminate. With these cautions the zero order form of the co-efficient will be used. It is a useful indicator rather than a proof but it has the merit of simplicity.

The data to be used is itself a source of error. About 15,000 weekly price statistics for paddy and rice have been collected for 6 markets in North Arcot District (Thiruvannamalai. Arni, and Polur—producermarkets; Arcot and Vellore—intermediate markets and Ambur—final destination market) and for 4 terminal or intermediate markets in other parts of Tamil Nadu stated by traders to be organically related, amongst others, to the producer market system within North Arcot District (Madras, Salem, Coimbatore and Nagerkoil) over the period March 1972 to June 1974 from the Department of Statistics, Tamil Nadu. This data is known to be collected by Taluk Statistical Officers from contacts within the trade who are considered to be reliable. It cannot escape some informant and some investigator bias. From careful inspection of the data it does seem that the quality of the price information varies. The Departmental records were not complete at the time of data collection and a period of 100 weeks out of the possible 116 weeks has been taken. The statistics were copied from Tamil carbons by the writer and were transferred to punched cards with a minimum ef recopying and with systamatic scrutiny. Where data was missing, the correlation programme used a paurwise deletion option on variates.

The price correlation technique has not been used in such detail and on such a micro scale before. Lele for instance used "average prices" for a wide swathe of unconnected markets and although the co-efficients were lower than those she calculated for Punjab and Maharashtra, she found significant and high values (1971). Cummings used monthly averages, which conceal the run-of-the-mill daily price fluctuations which may provide undercapitalised traders with quanta of 'excess profit' and are therefore too highly aggregated. He too found extremely high values (1967). The Department of Statistics gives data for 15 named varieties in the selected subset of market towns considered here. These varieties are necessarily unstandardised through time and space reflecting simply the most abundant types in each market at any one time. By contrast the Tamil Nadu Civil Supplies Commission classifies paddy and rice into 4 types (superfine, fine, medium and coarse) which are not completely congruent with the classification by price made by the free market itself. A compromise has been effected for this analysis. The 15 varieties have been reduced to 5 groups. Only in 2 cases to these groups consist of more than one variety and one quality. The superfine raw kichili is group 1; fine

samba and IR 20 comprise group 2; medium boiled sirumani, vyacunda and ADT 27 are group 3, coarse boiled rosekar is group 4 and coarse boiled IR 8 group 5. The classification of variety and type has been obtained from the Agricultural Research Station, Tirur, Chingleput (Pers. Comm. November 1973). In within-market correlations varietal heterogeneity does not matter. In group 2, samba in Salem and Nagerkoil and Tiruvannamalai is compared with IR 20 elsewhere. In most places in group 3 sirumani and vyacunda are compared. Other things being equal, we will expect price correlations in these two groups to be lower than in the others.

Data for 5 groups of paddy wholesale, rice wholesale and rice retail prices have been assembled for a time span of 100 weeks. To enable the testing of the last 2 sets of hypotheses the period is also subdivided in 5 additional ways; firstly weeks 1-69 from January 1972 to April 1973 which was a time of intermittent Government intervention and tolerably stable prices, weeks 70-100 over the span May 73 to June 74, a period of both intermittent intervention and increasing scarcity because of drought and inputs shortages which results in swiftly rising prices; a subset of 23 weeks covering the unstable periods of 3 weeks around each time of change in the percentage of paddy or rice compulsorily levied by Government; another subset of 38 weeks covering stable periods during Government trading operations and finally a subset of 39 weeks covering periods of completely free trade. The results reported below cover within market, within variety interform correlations; within market, within form intervariety correlations; within form, within variety, inter market correlations; within variety interform intermarket correlations for the 6 time periods. In addition, within variety inter form inter market correlations were assembled for 100, 69 and 31 week periods with both one and two week time lags to cope with the possibility of friction in the pricing environment due to the fact that paddy takes 2 to 3 days to be milled raw and 5 to 6 days to be parboiled, dried and milled, that Government permits and lorries also take time to organise before trade can take place.

The reduction in data by this analysis is not great. 15,000 price statistics are reduced at present into a data mine for 11,550 correlatien co-efficients. These have been reduced further into frequency distributions which have then been analysed using chi squared significance tests. Some of the correlations which T testing found to be significant have been mapped and in a majority of cases tests for the level of statistical significance of differences between two co-efficients have been applied.

Market Homogeneity

Inter correlations between 5 groups of paddy and 5 types of rice wholesale and retail were examined in each of the 10 markets for the 100 week period. Values are much lower than in the Cummings and Lele studies but each town showed a fairly uniform structure. Paddy price formation tends to be specific to each group and independent of other groups with low average correlations. Groups 2 and 3 are indeed lower than the rest. The rice markets in producer market towns also show evidence of low levels of inter-group correlation and independent price formation. But in terminal rice

TABLE 1

WITHIN VARIETY WITHIN FORM INTERMARKET PRICE CORRELATIONS % FREQUENCIES IN 10 BY 10 MATRICES—100 WEEKS 1972-74

Variety	From	>—0.75	0.5 to 0.75	0.75 to 0.5	0 to 0.75	0 to 0.75	0.75—0.5	0.5—0.75	>0—75
Kichili (1)	P		3	33	20	7	20	13	7
	√wh		3	28	8	14	25	14	8
	√√			33	4	22	26	11	4
IR-70 (2)	P			24	19	33	14	9	
	√wh		3	14	25	14	11	25	8
	√√		4	14	25	11	25	18	4
ADT-27 (3)	P			7	66	26			
	√wh			14	42	14	14	7	7
	√√			19	43	14	19	5	
Kar (4)	P			20	30	20	30		
	√wh	4		7	36		21	21	11
	√√		5	20	25	15	20	15	
IR - 8	P		5	14	14	38	10	19	
	√wh			13	16	22	22	16	11
	√√			14	11	33	22	11	8

markets such as Ambur, Vellore, Coimbatore and Nagerkoil prices are much more highly intercorrelated. Only in Nagerkoil and Ambur and among coarse varieties in Tiruvannamalai are any such correlations negative, suggesting strong substitution effects amongst varieties. Elsewhere one must conclude that fairly constant ratios of different groups of rice are maintained and that the economic markets are therefore likely to be separate. Since the paddy price markets are not homogeneous, there is little meaning in the 'average price' as used by Lele (1971).

Market Competition

If the market is competitive we have hypothesised that within variety within market interform correlations should be high. This is in fact so. With the exception of Vellore the average correlation co-efficients for paddy with rice wholesale, rice wholesale with rice retail and paddy wholesale with rice retail exceeds 0.65 Co-efficients are highest in consumer markets, next high in producer market towns and lowest in intermediate market towns with complex trading patterns. In 2/3 of the cases the rice wholesale-rice retail correlations exceed paddy wholesale-rice wholesale correlations which in turn exceed paddy wholesale rice retail correlations which is consistent with the hypothesis that there will be greater price friction the larger the number of trading services performed. The intra form correlations for kichili are lowest. This would be entirely consistent if prices of kichili rice relate to those of kichili paddy of an earlier period rather than to contemporary paddy prices.

80 over the 100 week period the paddy and rice market, while not homogeneous maintained a fairly high level of intra town 'intergration'.

TABLE II

TRADERS' PRICING NETWORKS

ORIGIN	DESTINATION				
	Kichili		ICAR		
Cheyyar	Vellore	Madras	Salem	Coimbatore	
Arni	Vellore	Madras	Vellore	Coimbatore	
Intermarket rice correlations	0.47	—0.36	0.47	—0.22	
Polur	Vellore	Madras	Coimbatore	Dindigul	
	—0.58	—0.36	0.37	?	
Tiruvannamalai	Vellore	Madras	Vellore	Salem	Coimbatore
	0.70	—0.36	0.37	0.23	0.26
Vellore	Madras	Coimbatore	Ambur	Madras	
	—0.25	—0.24	0.66	—0 21	

Regional Connectedness

If the economic market performs competitively over a wide geographical area, within variety within form inter town correlations should be high, decreasing with increasing distance. Inspection of frequency distributions of correlations in the 15, 10 by 10 correlation matrices shows that neither of these hypothesis are consistently true, and the data shows a bewildering frequency of occurrence of low and insignificant and significant but negative correlations, Table I. In fact traders generally get price information by phone from a limited number of contacts in a few places. Information given by a random sample of paddy traders suggests the pattern of regional interconnectedness shown in Table II, but the facts as represented by the correlation co-efficients are not a convinving support for what traders say. Intermarket price formation is obviously not at all straightforward and there are many explanations why this should be. One explanation for low and/or negative correlations is that paddy prices are determined by local supplies and intermediate demand in the local town while rice retail prices are determined by local demand and intermediate supply in the consumer towns. This does not help in explaining low correlations in the interregional rice wholesale market, though in the analysis so far we have not taken time lags into consideration. Low price correlations may also result from antisocial hoarding and from speculative stocking. They may just as easily result from transport bottlenecks, from movement restrictions and from legitimate uncertainties in times of Government interference. They may result from grave imperfections in the flow of information from the markets. They may also result from non-unidirectional trade where centres may be in deficit at some points in the marketing year and in surplus in others. A year or two may be a misleading aggregation. Market towns may be interconnected for some parts of the year and not for others (Timmer, 1974).

The statistically significant connections in the pricing sub-system of market towns over two years can be illustrated on a logarithmatic cartographic representation. Apart from the very great variety patterns two further generalisations can be made. Firstly it would seem that for both paddy wholesale and rice retail price formation is more localised and atomistic than is the case with wholesale rice (in other words, that the first explanation for low correlations given above and supported in Table I is convincing). Secondly in the rice wholesale pricing system where regional connectedness is far more evident, there appear to be two main zones of market integration—one in the producer and intermediate market towns of North Arcot itself, and the other between Ambur, representing consumer markets within the District, and the major consumer market towns of the State. Each end of the marketing system is better integrated than is the system itself. This strange behavior may well stem from Government's public distribution system policies which succeed in controlling excessive price rises in deficit centres of final consumption and therefore reduce the average levels of correlations between the geographical extremes in the marketing system. To consider the market simply in terms of the trading or transferring of place utility of one product ignores the equally legitimate object of marketing to transfer form utility. Place and form utility are combined in the correlations between paddy prices in origins and rice wholesale prices in destinations.

TABLE III

CONNECTIVITY* OF PADDY - RICE PRICING ENVIRONMENT, N.A. DT.

Variety	Weeks <69	Weeks >70	Periods instable	Periods stable	Periods free trade
Kichili	18	58	70	71	76
IR-20	31	49	47	58	56
ADT-27	25	35	41	43	47
KAR	17	55	38	50	40
IR-8	22	84	50	50	81

*Connectivity index of markets, ranges between 0 and 100 formula explained in next.

TABLE IV

INTERFORM INTERMARKET PRICE CORRELATIONS - 100 WEEKS FREQUENCY DISTRIBUTION

	>—.75	—.5to—.75	—.25to—.5	0to—.25	0to—.25	.25 to .5	.5 to .75	>.75
Kichili			33	5	19	29	14	-
IR-20			35	15	35	8	4	4
ADT-27		4	11	52	7	19	4	4
KAR		3	24	24	21	24	3	
IR-8		1	13	21	27	24	9	4

The origins in the following case are all exporting and milling towns in the eastern taluks of North Arcot District and the Deficit destinations are the long distance trading ties described earlier and the town of Ambur within the district, Table III.

Over the 100 week period the general level of intermarket inter form correlations (compare Tables I and IV), is uniformly lower than that of inter market within form correlations. It would seem that among the paddy varieties the lower the volume traded and/or the shorter the distance traded the lower the average level of integration and the fewer and more local the significant positive correlations. Thus kichili and IR.8 varieties catering for the

two extremes of demand, have higher and widespread levels of integration while kar is not highly integrated.

The lowness of the values is in striking contrast to those found by Lele and Cummings. Insignificant correlations approaching zero can point to a total independence between markets; significant but negative correlations (as between kichili paddy in Tiruvannamalai and kichili rice in Coimbatore, Salem and Madras, all varieties of paddy in Arni and rice prices in local markets, ADT. 27, kar and IR.8 paddy prices in Polur and Arcot and local rice markets) can only be interpreted meaningfully as pointing not only to a lack of connection but a positive degree of spatial monopoly where no evening out of price differences occurs by trade. Insofar as these significant negative correlations characterise coarse varieties and local ties this finding is very interesting. Traders may well have better price information about long distance destinations than about local ones. Fixed costs of transport may be too high to justify local transport. Government may refuse local transport to take place. However, it seems that the consumers of coarsest types of rice within the surplus district are faced with a far less perfect 'integrated' market and with greater possibilities of local spatial monopolies than do consumers of fine varieties of rice.

Because paddy takes between 2 and 6 days to process depending on whether it is parboiled and/or needs to be additionally sun-dried before milling and because transport may not always be easy to arrange, paddy prices in origins were correlated with destination rice prices with a 7 days and 14 days lag. The difference between co-efficients was tested for significance firstly by transforming the co-efficients into normally distributed Z statistics using the formula

$$Z = \frac{1}{2} \log \frac{1+r}{1-r}$$

Then the null hypothesis that $r_1 = r_2$ was tested by the statistic

$$U = (Z_1 - Z_2) / \left(\frac{1}{n_1 - 3} + \frac{1}{n_2 - 3}\right)^{\frac{1}{2}}$$

U is approximately normally distributed with a mean zero and variance 1.0 (King 1969).

We would expect the values of coarse grains to increase with the lag. In fact out of 168 pairs of correlations with a 7 day lag, 11 or 6.5% showed a statistically significant increase in 'integration' (at the 5% level) and half of those pairs were of kichili, the finest rice. Testing with a 14 day lag gave a similar result. Breaking the 100 weeks into a normal period (69 weeks) and a period of scarcity (31 weeks) also did not affect the result. In about as many cases lags actually reduced the level of correlation in a statistically significant way. Since 93.5% of correlations were 'unaffected' by lagging, the procedure was not used in any further analyses. This suggests that either the paddy market is 'integrated' in a day-to-day fashion or that the time lag is longer than 14-21 days, a reason for which is hard to see.

TABLE V

WITHIN VARIETY, WITHIN FORM INTERMARKET PRICE CORRELATIONS - SCARCITY CONDITIONS

Variety	Form	>.0.75	-0.5to0.75	-0.25to-0.5	0to-0.25	0to0.25	0.75-0.5	0.5-0.75	>0.75
Kichili	P<69			33	13	27	13	6	6
	p>70		53					20	26
	rw<69			17	14	43	3	3	20
	rw>70		47			13	6	6	28
	M<69			21	15	48		3	12
	M>70		32	21			4	11	32
IR20	p<69			10	40	30	15		5
	p>70		24	24	5	5	24	14	5
	rw<69			6	33	25	19		17
	rw>70	27	14	14			8	3	33
	M<69			10	27	33	20		10
	M>70	21	18	14			11	4	32
ADT27	p<69		10	10	60	10	10		
	p>70			27	45		9		18
	rw<69			23	41	6		11	6
	rw>70		7	33	20	10	10	13	7
	M<69			30	30	10	10	20	
	M>70		5	40	20	10	10	15	
Kar	p<69			10	20	40	20		10
	p>70	20		10	20	10	20	10	10
	rw<69				21	45	10		24
	rw>70	43		14				11	32
	M<69			5	29	48			19
	M>70	43		14				14	28
IR8	p<69			19	29	24	19	5	5
	p>70		7			35	14	14	29
	rw<69		2	15	13	36	6	20	7
	rw>70			12	14	7	29	12	26
	M<69		3	19	8	36	17	11	6
	M>70			14	14	6	36	11	19

TABLE VI

BETWEEN FORM BETWEEN MARKET PRICE CORRELATIONS–SCARCITY CONDITIONS FREQUENCY DISTRIBUTIONS

Paddy-Rice correlations	Period	>-0.75	-0.5to-0.75	-0.75to0.5	0to-0.75	0to-0.75	0.75-0.5	0.5-0.75	>0.75
Kichili (1)	<69			21	26	32	13	3	5
Paddy with rice whole-sale	>70		18	16	11	3	5	13	34*
IR20(2)	<69			37	21	23	9	9	
	>70		11	18	3	6	26	20	15*
ADT27(3)	<69		4	11	42	23	11	4	4
	>70	9	14	5	15		19	24	14*
Kar (4)	<69			15	8	62	7	8	
	>70	22	4	11	11	11	15	26	*
IR8(5)	<69		2	13	13	49	13	10	
	>70	12	2	5	2	17	40	13	8*

TABLE VII

INTER FORM INTER MARKET PRICE CORRELATIONS–FREQUENCY DISTRIBUTIONS–LEVY

p-r	Period								
Kichili unstable	1	5		14	5	9	18	14	32
stable	2	6	3		3	18	18	20	36
free trade	3	8	3	3	3	8	9	11	55*
IR20	1		8	11		27	23	15	15
	2			14			21	25	39
	3			3		14	7	32	43*
ADT-27	1			7	20	20	13	28	13
	2		12	6	25		19	31	6
	3		12	6		25	37		19*
	1	7	14	14		7	7	14	36
	2					29	14	7	50
	3			7	7	29	29	21	7*
IR8	1	6	9	26	9	13	13	13	9
	2	3	3	13	7	13	19	19	25
	3		3	6	6	10	21	35	11*

The Effects of Scarcity on Market Homogeneity and Integration.

Within variety within market inter form correlations, within market within form intervariety correlations and within form within variety inter market correlations have been calculated separately for the period of 69 weeks before the scarcity and the 31 weeks period of scarcity. In most towns, as scarcities bit, and absolute prices rose and narrowed, the economic market became less differentiated, more homogeneous and better integrated. Interform correlations rose by 5% (11% of which differences were significant at the 5% level) and intervariety correlations rose by on average of 60% (40% of differences being significant) - Within form regional interconnectedness increased very greatly, the average correlations between all forms and varieties in one town and all forms and varieties in the 9 others doubling from 0.33 to 0.65 (34% of the differences being significant using the U test).

Interform, intermarket correlations rose by an average of 95% and 31% of the differences between r's were statistically significant using the Z and U test. Chi squared tests comparing the frequency distributions of co-efficients in the 69 and 31 weeks periods with those for the 100 week period revealed differences significant at the 1% level in all cases for both within and between form intermarket correlations (Table V and VI). In most cases in the period of scarcity extreme values increased in frequency. No particular type or form of paddy or rice stands out as reacting exceptionally. Significant correlations (at 1% levels) between origins and destinations have been used to compute an index of geographical connectivity.

$$CI = \frac{obs}{100}(n-1)x$$

where obs = total number of observed statistically significant correlations between x origins (within N.A. Dt.).

x = number of origins trading in specific variety

n = total number of towns (whether origins or destinations) trading in specific variety.

CI will range from O (totally independent price formation) to 100 (Complete integration). The results are shown in Table III and confirm a striking and uniform increase in integration over the period. Since the Government did not alter its broad strategy of partial intervention in the free market over this period and since there are no other obvious reasons for the great improvement in market integration, we can attribute it to the action of scarcities. We can hardly argue the reverse however: that one way of improving the competitiveness of the free market is by arranging scarcities! But it is important to notice that the economic market is evidently not less 'Integrated' during drought, than it is under "normal" cropping conditions. It ought to be added here that prices in Kanyakumari were lower than those of North Arcot during the 31 week period, lending weight to the idea that partial Government intervention may worsen conditions for the poor in a surplus district to the advantage of all in a severely deficit district.

The Effects of Government Intervention.

The various types of correlation have been calculated for times of free trade.

stable periods during Government levy operations and unstable times of change in the percentage taken by Government. Before market integration is discussed, however, some interesting features of absolute price behaviour are worth a mention. A suggestion was made in an earlier paper that, at times of change in the levy, irrespective of supply and demand, prices on the free market react in the same direction as the change in levy. This reaction is caused by the inclusion of the averaged out levy loss into the residual market price (Harriss 1976). The behaviour of Kichili rice and rosekar rice prices in 4 markets at different points in the geographical marketing system over times of levy change from 1972-1974. Even though the levy is charged on traded paddy and rice, only 18% of North Arcot's levy is given in paddy. It would not be surprising if the economic paddy market showed no price responses to the levy since it is on rice that the hoist is made. Similarly price responses are less likely to be found in the economic rice markets of producer market towns (where rice has not yet been traded) than in destination towns. Further if the levy is paid in cheapest and coarsest rice (or paddy) and even if the averaged out loss is hoisted onto all the varieties of rice traded by any one dealer we will expect the relative and absolute impact to be greatest in the coarser varieties.

The response to levy changes is much more marked for kar (coarse) than kichili (fine) and much more marked in secondary and terminal markets than in producer markets. In general then levies do result in distortion of the free market for those types of rice most in demand by rural and urban vulnerbale people **not** catered for (at least in 1972-74) by the Government's reticulation of Fair Price Shops.

We can follow this by arguing that traders who attempt to predict future price conditions (part of the nuts and bolts of trading skill) and who do not have enough capital to stock for long periods of time (a fairly normal condition as we will see) are more likely to misjudge short term price conditions about the times of changes in the percentage levied than in more stable periods. We can hypothesise simply that interform intervariety and inter-market price correlations will be lowest in unstable periods and highest in times of free trade. In fact the results do not lend complete support to these hypotheses.

With regard to interform correlations only 6% show an increase in integration (significant at the 5% level) between unstable times and times of free trade and 15% show an increase between stable times of intevention and free trade. The vast majority of "reactions" are unattributable to anything other than random fluctuations. 34% of intervariety paddy correlations between unstable times and free trade are significantly improved and 20% between stable times and free trade. The respective percentage for rice whole-sale are 26 and 42. This means that here a large minority of prices are behaving in accordance with the hypothesis but that it is by no means proven.

There would appear to be some reduction in the independence of price formation and an increase in within market integration in times of free trade but it may be precisely such times that there are post harvest gluts when prices move absolutely more together so that it may be the supply conditions rather than Government policy that improves market "integration."

TABLE VIII

WITHIN VARIETY WITHIN FORM INTERMARKET PRICE CORRELATIONS - LEVY. FREQUENCY DISTRIBUTION

	Period	>—.75	—.5to—.75	—25to—.5	0to—.25	0.—.25	.25—.5	.5—.75	>.75
Kichili Paddy									
unstable	1						13	27	60
stable	2						15	15	69
freemade	3							36	69*
Kichili rice									
wholesale	1			7	5	10	22	27	28
	2				3	14	33	19	31
	3	19		6		16	6	16	35*
Kichili rice									
retail	1			4	11	4	26	18	27
	2				3	14	32	7	43
	3	14	7		3		3	14	57*
IR 20p	1		6		13	40	20	7	13
	2			10		20	10	40	20
	3			7		7	27	33	27*
IR20rw	1					14	23	24	38
	2		25	14	3		21	28	7
	3		4	4	9	19	28	24	9*
IR20M	1					20	6	13	60
	2		10	25	5		30	20	15
	3				20	20	20	20	20*
ADT27p	1			33		33		33	
	2		33	33			33		
	3			66					33*
ADT27rw	1		10	30	20	30	10		
	2		10	30	30	10	10	10	
	3	10	20	20	10	10	10	10	10*
ADT27M	1			50	16	17	17		
	2		17	33	17	17		16	
	3	16	16	33	17				16*

Period		>− 75	−.5to−.75	−25to−.5	0to−.25	0.−.25	.25−.5	.5−.75	>.75
Kar p	1			40	20	10			30
	2			11	22				67
	3			20	26	20	10	20	10*
Kar rw	1	7	11	7				29	44
	2			3	10	31	14	7	34
	3		3	3	27	17	20	13	17*
Kar M	1		23	5			9	24	38
	2				9	38	19	19	14
	3		5	5	14	24	24	5	24*
IR8p	1	6	13	25	13	6	19	19	
	2			47	7	14	14	7	14
	3	20	13		7	7	7	20	27*
IR8rw	1		6	11	26	8	17	11	20
	2	10	5	2	18	20	20	5	10
	3		5	3	11	17	6	3	55*
IR8M	1		11	7	25	18	18	14	7
	2	14	4	7	11	18	25	11	11
	3		4	4	15	4		19	55*

It is only in the intermediate market of Vellore and the terminal market of Coimbatore within our subsample where price behaviour is entirely consistent with the hypotheses and since Coimbatore is often under different levy regulations its conformity may well be spurious. Elsewhere inter-variety price correlations are highest during periods of stable Government control. When we turn to intermarket correlations, none of the correlations between paddy and 25% of the correlations between rice varieties show statistically significant improvements between unstable periods and free trade and 25% of paddy and 36% of rice correlations show this improvement between stable times and free trade. Rice more than paddy shows a measurable improvement in regional integration in times of free trade. This is consistent with the earlier finding about the local nature of paddy price formation. The number of pairs of correlations which show an increase in integration in times of free trade is far larger than the number of pairs for which the increase is significant. Over 50% of all cases show higher integration with free trade, the remainder being divided equally between instances where highest correlations are obtained during stable periods of levy and the fascinating instances where the market is most "integrated" in unstable times. Strikingly, rosekar prices display this trend. The type of rice whose pricing environment is most distorted by the action of the levy is also the type whose market shows greatest integration in times of changing policy. A moment's thought suggests that "integration" in this context may reflect a uniform reaction of perhaps a speculatory nature since the levy loss on

all traded paddy and rice appears to be more than proportionately added to free market kar prices. This does not necessarily mean than traders make excess profits, merely that their inevitable price hoists and reductions are not spread throughout the whole range of varieties in which they deal. The discovery of such behaviour must call into question the easy equation of high correlation co-efficients with high degrees of perfection of competition. A situation can easily be envisaged where uniform speculative activity would result in high correlation co-efficients.

About a quarter of the paddy-rice intermarket correlations show significant improvements between unstable times and free trade and stable times and free trade whereas Tables VII and VIII show that in all cases the frequency distributions of price correlations in these 3 periods were significantly different from 100 week frequency distributions. It is impossible to claim that the direction of change in frequency distribution of any of the varieties displays any pattern. There is more variation in reaction between varieties within each period than between periods and within varieties. Table III shows the connectivity index which broadly confirms the original hypothesis. It is with the three coarsest types, above all IR 8 in which the levy is conventionally paid, that improvement with long distance destinations is most marked in times of free trade and strikingly reduced during periods of intervention.

Conclusions

The study has been worth the effort in that it has been found that price formation for each variety tends to be independent of the rest, that within any one market town the pricing system seems well integrated but that regional connectedness is good only for rice wholesale prices and poor for paddy and rice retail, that coarse local varieties are less well regionally integrated than fine varieties or coarse ones which are traded long distances, that the poor in this surplus district are at a pricing disadvantage to all sectors of society in a badly deficit district like Kanyakumari. In times of scarcity the market moves more closely together than in times of normal harvest. Lastly, markets appear to show most integration in times of free trade and in times of stable Government levies (and kar is almost as highly correlated during the latter periods as during times of levy change). Since the Government has a political obligation to supply foodgrains to vulnerables and therefore must operate some kind of levy, the policy implication of this study is that Government should try to alter the percentage levied as little as possible. Ideally it should be kept constant throughout the year. The correct level at which Fair Price Shops can be permanently supplied and a buffer built in times of abundance to cover a larger supply in bad times cannot be calculated for one district alone but has to be done as part of a statewise strategy. It is a separate topic of some complexity and would be a practically useful object of further research.

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REFERENCES

Blyn G. 1973 "Price Series Correlation as a Measure of Market Integration" Indian J. Ag. Ec 28,2, 56-59

Chinnappa B.N. 1976 "Adoption of the New Technology for Paddy Cultivation in North Arcot District" in ed B.H. Farmer

Cummings R.W. 1967 "Pricing Efficiency in the Indian Wheat Market" Delhi

Farmer B.H. (ed) 1976 "Green Revolution? Technology and change in Rice Growing Areas of Tamil Nadu and Sri Lanka" Macmillans London

Harriss B. 1976 "Besieging the Free Market– the Effects of the Paddy—Rice Levy in Tamil Nadu" in ed. B.H. Farmer

King L.J. 1969 "Statistical Analysis in Geography" Prentice Hall N.J.

Lele U.J. 1971 "Foodgrain Marketing in India—Private Performance and Public Policy" Cornell University Press N.Y.

Timmer C.P. 1974 "A Model of Rice Marketing Margins in Indonesia" Food Research Institute Studies, Stamford, California, 13,2,145-167.

Summary of Discussion

In the discussion of the paper at the Seminar held in the Seminar room of the Institute on Thursday, 26th February 1976, under the chairmanship of Dr. Malcolm S. Adiseshiah, Director, Madras Institute of Development Studies, the paper written by Mrs. Barbara Harriss, Centre of South Asian Studies, Cambridge, U. K., was presented by Dr. V. Shanmugasundaram. In presenting the paper, he said that it is one of the papers forming a study of the "Green Revolution". It reflects the interdisciplinary approach consonant with the author's educational background of geography and land management. The strength of this micro level study lies in the fact that it carries out an intensive survey with the corresponding statistical analysis of price variations of paddy and rice in relation to government trading. In some measure it is complementary to her study of marketing of wheat in Ludhiana. The statistical data comprise of 15,000 weekly price statistics of paddy and rice, for a period of 100 weeks (March 1972 to June 1974), for 6 markets in North Arcot district and for terminal or intermediate markets in other parts of Tamil Nadu, organically related to the producer market system within the district. On the basis of this analysis, the influence of the government policies—levy, procurement price fixation and prices at distribution outlets—on the open market prices of coarse and fine varieties of paddy and rice are investigated. The price correlation technique is the tool used in the study, while earlier studies have used average prices and monthly averages. A clear distinction between free market and perfect competition could have been more explicitly established. In considering the effect of government policy on prices, it was pointed out that the levy percentages

were prescribed for short periods and prices were also similarly fixed. Further, the cropping pattern enabled the growing of the coarser varieties (IR 8, Kar) in all three seasons while the finer variety, Kichili Samba, only once a year. Hence to meet the levy, only coarser varieties were surrendered by the trader and any loss incurred in the process was compansated for by raising prices in the open market. Consequently the impact was considerable on the market prices of coarser varieties, while not so sharp on the prices of the finer variety. The conclusions formulated are:- There is no linkage in the price formation of different varieties, but the pricing system in one market town seems well integrated. Regional connectedness is evident only for rice wholesale prices and the finer varieties, also for coarser varieties commanding wider preference. Retail prices of rice and of coarser varieties largely in local demand also of paddy wholesale prices do not reflect this integration. A significant feature is that the poor in the surplus district are at a pricing disadvantage compared to all sectors of society in deficit areas. Free trade and stable government levies appear to be integrating factors.

It was observed that the paper presented a convincing picture of the wholesale and retail pricing system of paddy and rice in North Arcot District and the variations induced therein by government trading in this essential commodity. Some of the assumptions regarding free and competitive markets would have been more explicit if these terms had been defined. The production of coarse varieties is encouraged by supply of inputs like seeds, fertilisers, water etc at subsidised rates and prices are also controlled in the public distribution system. Production and price structure of finer varieties are governed by supply and demand. The paper refrained from resorting to explicit value judgments while taking account of the ideological priorities which led government to invest capital and manpower in duplicating existing services provided by the marketing structure. Its conclusions, however, bore traces of an inverted ideology in the acceptance of modified controls in contrast to the earlier studies by Cummings and Lele which reject these altogether. In this context the tendency of contemporary social science investigation to evade global synthesis of micro - value free and segmented pre-occupation was critically commented upon. Equitable distribution and fair prices were social objectives and policies ensuring a supply of essential cereals involving utilisation of marginal lands, marketing of inferior food grains and expensive overheads of State procurement could not be judged by economic cost-benefit criteria alone. Of course, these costs could be rationalised within the framework of equitable distribution to vulnerable sections and scarcitiy areas. It was pointed that State intervention was not the only factor affecting food grains price structure as variations are a function of production decisions as well. Even farmers with a marketable surplus produce not to maximise profits but optimise production to pay taxes, meet levies in kind and pay off debts. Another relevant consideration arises from the heterogeneity of consumer preference for varieties with differing characteristics. This irrational element could be allowed for by regulating the market for coarser varieties in mass demand and free market for finer varieties. In discussing price variations, the existing practice of paying labourers in kind has also to be taken into account. Even in surplus areas the poor sections of the rural society—the agricultural labourer and marginal farmer—were generally consumers of millets. Further, the influ-

ence of distance between production and marketing centres and seasonal factors in price variations required further study.

The inquiry carried out by the paper " into four aspects of market structure " concludes that policy implication is that government should adhere to a stable state of levy. Even though a micro study, it focuses attention on basic strategies of food policy. The discussion raises the issue whether the policies should be commodity oriented rather than area based. These policies should be designed with the twin objectives of planning for scarcity as well as for plenty and for arranging a distribution system which would absorb and hold in stock surpluses from bumper harvests for distribution in leaner times. The study is a valuable one which points the way to further micro studies of this nature for other districts in the State.

Economic Trends in Tamil Nadu*

Sources ;

Four documents released in the second half of 1975 throw some light on the economic profile of the State. They are (a) the Economic Appraisal of the State for 1974 (2 volumes) issued by the State Government in October 1975, (b) the All India Debt and Investment Survey for 1971-72 of the Reserve Bank of India, India (2 volumes) issued in August 1975, (c) the results of the 25th Round of the National Sample Survey covering the period July 1970 to June 1971 available as advance information in November 1975, and (d) the inter-state statistical compilation of the Economic Monitoring service of the Commerce Research Bureau. Bombay covering the period upto 1973-74 issued in October 1975.

Limitations :

There are two limitations in using these 4 documents as an information base for an analysis of the State's economy. The time period covered varies—the NSS round referring to 1970-71, the RBI survey to 1971-72, the Commerce Bureau's monitoring to 1973-74 and the State Government's appraisal to 1974. Given this temporal non-comparability, it is only some aspects of economic trends in the State rather than its economic status or profile that can be derived from these sources. Second some of the raw data when juxtaposed presents a somewhat contradictory and confusing profile, calling for further study and research which has not as yet been undertaken but will be during the coming year. What is presented here is thus a tentative tracing of some trends.

Building up of Physical and Human assets :

The trends in building the physical and human capital assets in the State are seen to be positive. First, agriculture and related assets. With 7.5 per cent of the Country's population, Tamil Nadu after Uttar Pradesh and Punjab, has the third highest percentage of the irrigated area of the country at 8.4 per cent, and 51 per cent of its sown area under reasonably assured water supply. Similarly, in regard to one fact of agricultural mechanisation, the State has built itself into the highest position in the country with 4,68,215 pumpsets. The pattern of land utilisation in the State between 1960-61 and 1970-71 shows an increase in the sown area from 46.1 per cent to 47.4 per cent of the total arable land, as well as an expansion of the forest land from 14.4 per cent to 15.5 per cent of the State. land area. It has steadily increased and is the second highest per hectare of cropped area consumer of fertilisers which has expanded from 24.6 Kg in 1968-69 to 46.2 Kg in 1973-74. It is the 7th among the States in terms of the absolute number of its livestock population at 24,569.

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* Extracts from a paper prepared by Dr. Malcolm S. Adiseshiah for the Swarajya Annual — 1976.

Second, the electric power build up. In terms of installed capacity, the State with 13.8 per cent of All India installed capacity has emerged at the top position in the country, It has also come to occupy the second rank in the country after Maharashtra in power generation at 19.9 per cent of All-India generation. It is in the middle position with regard to the sources of power generation, with 54 per cent hydel and 64 per cent thermal generation compared to Kerala and Karnataka which are 100 per cent hydel based while West Bengal, Bihar, Gujarat and the Union territory of Delhi are 92 to 100 per cent thermal based.

Third, its infrastructure development. In road length, the State is in the 5th rank among States, in railway route—the 6th and in goods vehicles per lakh of population the fourteenth. After Maharashtra, this State is the second most urbanised with 44 major and 395 other centres in which 30.3 per cent of its people live, while its 15,735 villages have an average population of 1,289 persons.

Fourth, the minerals and manufacturing trends. Minerals extraction has developed around limestone, lignite, bauxite and Gypsum. In manufactures, the good performers in 1974 were bicycles. Sugar, motorcycles, rubber products, cotton yarn, motor vehicles, heavy chemicals and cement, while negative rates of growth for the year were recorded for wheat products, power transformers, tea and fertilisers.

. Fifth, human resources development. Social services expenditures in the State have been sharply accelerating from 1971-72 to 1975-76 at 33 per cent with education being the major resources consumer at over 50 per cent of the increase referred to. On the demographic side, the State's population has increased from 4.1 crores in 1971 to 4.34 crores in 1974 with a birth rate of 2.34 per cent, a death rate of 0.82 per cent and a high infant mortality rate of 4.9 per cent. The population trend is placed at 4.76 crores in 1976, 5.32 crores in 1979 and 5.56 crores in 1981. In regard to educated man power, the scientific and technical man power of the State has increased to 66,890 during the fourth plan which is 10 scientists per 7,000 people. Enrolments have increased by 8 per cent at the primary, 46 per cent at the secondary, and 59 per cent at the tertiary level at the end of the Fourth Plan.

Sixth, the work force profile. The work force is reduced from 45.57 per cent to 36 67 per cent as between 1961 and 1971, due to a change in definition of a worker. Moreover, there is no basis for tracing the trends on the aggregate of employment, unemployment, underemployment and the thinly employed in the State, except the estimates provided in the State's perspective plan, which computes those seeking employment growing during the period 1974-84 at 215 lakhs. The State's labour force is divided into 64.5 per cent in Agriculture (All-India 72 per cent) 7.8 per cent in manufactures and mining (All India 5.6 per cent) and 20.3 per cent in services (All India 16.8 per cent). 21 per cent of the total workers are women, the State being in the 6th rank in women's employment, (All India 17 per cent).

Finally, the banking and fiscal trends. After Maharashtra, Tamil Nadu is the second best banked State, contributing 7.1 per cent to All India deposits and

drawing on 10.7 per cent of All India credit. Its Fourth Plan Development expenditure was Rs. 87 per capita and non-development expenditure Rs. 32 per capita, which places the State in the middle position among the States. On the fiscal side, the State has a rather outstanding resource mobilisation record in making the highest tax effort, being in the first rank in the tax ratio, second in the income elasticity of tax revenue and the third in the marginal tax rate.

Decelerating performance trends:

Despite this sound building up of its physical and human assets, the economic performance of the State is marked by a disturbing decelerating and/or stagnant trend.

The State's growth rate of food grains production in the 12 years, 1961-62—1973-74, places the State in the 11th rank at a compound rate of 2.3 per cent. The usual explanation that this is due to the predominance of small and fragmented farm holdings in this State has some truth. The Economic Monitoring Service places the State in the 15th inter-state rank, with 1.3 hectares of net sown area per cultivator. RBI's All India Debt Survey places the State at the bottom in terms of the value of rural household assets. 25.54 per cent of rural households in this State have assets less than Rs. 500 (compared to 2.33 per cent in Punjab, 2.68 per cent in Rajasthan, 3.23 per cent in Haryana and 11.38 per cent All-India), while those with Rs. 5,000 and above are only 32.27 per cent in our State (compared to 65.53 per cent in Haryana, 61.94 per cent in Rajasthan, 57.82 per cent in Punjab and 48.69 per cent All-India). But given the scale neutrality of the new agricultural technology whose use or misuse is indicated in the per capita fertiliser comsumption and the area covered by assured irrigation in this State, referred to earlier, the explanation must also be sought in the lack of the farm management and farmer education input in our agricultural strategy, which can be supplied fairly simply and expeditiously.

The compound rate of growth of the manufacturing sector in the State for the period 1961-62 to 1973-74 is 4.1 per cent against the All-India percentage of 5.2 and the State plan target of 14. A related decelerating indicator is the downward trend of the number of registered factories from 1972. This stagnation and deceleration cannot be explained in terms of capital scarcity as the State is drawing more than its share on All India capital and credit resources, nor on the lack of scientific and technical manpower, which is in relative adequate supply as noted earlier. Part of the explanation is to be found in the inadequate managerial talent in the State which still relies on family traditions and heritage, rather than on managerial training as demonstrated in the fact that only 4 of the hundred largest companies in the country are located in the State.Part of the explanation must also be found in the lack of any major central investments in the State since the start of the fourth plan. Another part in the disturbed industrial relations, the State being in the third rank in the number of mandays lost (in 1974, 2.4 million mandays were lost). There is also the problem that despite its large stock of technical and scientific manpower there is no Research and Development policy and assurance of the flow into the commercial production field of the results of its laboratory research. The State needs an industrial policy and more back up from the Union authorities in its execution. There is the All India urgency for some relief in the high excise rates and some scaling down

of the penal rates of interest imposed on industry.

There is also a declining trend in its infrastructural development. Along with West Bengal, it shares a fall in the index of infrastructural development from 171 in 1966-67 to 164 in 1971-72. Its housing performance is good in urban areas where there has been a doubling to over 20 lakhs housing units between 1960 and 1974. Rural housing has however developed at half that rate, with 58 lakh houses. The most serious drag is power. Despite its high standing in terms of installed capacity and power generation, it has a low efficiency rating when measured by power generation per year, per kw capacity. Which places the State in a low 16th rank. Deceleration in infrastructure has acted as a stagnating factor for the manufacturing sector. Both for manufacturing revival and countering unemployment a planned infrastructure development programme can play a key role.

The Government's financial position presents a sombre picture. On revenue account, the 1975-76 estimated deficit is Rs. 30 crores and on capital account Rs. 72 lakhs. These will certainly increase with the drought relief expenditure and the subsidised food programme which had to be undertaken in 1973-74 and 1974-75. On revenue account, the sharp reduction in the State excise income from Rs. 56.46 crores in 1973-74 to Rs. 2.66 crores in 1975-76 is not compensated by the estimated Rs. 20 crores increase in the agricultural incomes, the Rs. 7 crores increase in sales tax as against which the decline in non-revenue must be set off. All this is demonstrated in the trend of its per capita plan outlay declining from Rs. 113 in the Fourth Plan to Rs. 32 in the 1975-76 Annual Plan. An exacerbating factor is that it is among the six bottom States in per capita resource transfers from the Union to the State Government. There is need for a fiscal restructuration in the State, particularly as the task of agricultural, industrial and infrastructural revival calls for larger public financial resource outlays.

Rural living levels :

In regard to facets of rural levels of living in the State, the data available indicates some significant, disturbing and puzzling (as noted at the start) trends. The 84th quarterly Economic report of IIPO has attempted a first interesting analysis in this regard. Taking 1970-71 as the year when the RBI survey on rural assets, the NSS round on rural consumer expenditure and the Economic Monitoring and the Economic Appraisals of the State Government with regard to per capita State product (in current prices) and the per capita hectarage distribution and area irrigated can be juxtaposed, the following tentative results emerge. First the State with a fairly high per capita State product (Rs. 624 in 1970-71 at the seventh all India rank with Punjab Haryana Gujarat, Maharashtra Himachal Pradesh and Rajasthan being above it) has the second lowest rural households assets position (after Orissa) at Rs. 6,826.56 (being about 50 per cent of All India rural households assets average of Rs. 11,343.34) and a similar position with regard to per household land ownings valued at Rs. 4,416.99 (compared to the All India rural land ownings at Rs. 7,511.96). In regard to average monthly rural household consumer expenditure, the State occupies the lowest position in the country at Rs. 131.65, with Punjab at Rs. 344.90, Haryana at Rs. 316.83 and even Uttar Pradesh and Bihar at Rs. 191.75 and Rs. 190.76

respectively, (the All India average being Rs. 191.27). There are some issues here which need investigation. With the low rural house-hold assets position, how does the State per capita income come to be so relatively high? Or again with the high per capita income in the State, why are rural household monthly consumer expenditures so low? The explanation for the first issue might be found in the widening gap between urban and rural levels of living and the price level differentials between the two. This is supported both by the NSS 25th round results which show urban per family expenditure at Rs. 200.16 and rural as seen earlier, at Rs. 131.65, by the statistics of rural—per capita household incomes available in the Tamil Nadu appraisal documents and the CSO monthly publication of the consumer prices of agricultural workers (rural) and those for industrial workers (urban). On the second issue, one answer could be that the rural household saves more and so spends less on consumption—a hyphothesis which does not hold because rural per capita household incomes are low and the household per capita debt position is high, as recorded in the RBI survey. The only clear fit in these figures is that the rural families have a low assets position, hence a low income status (verified also from the Tamil Nadu appraisal source) and so a low consumption pattern.

Second the State having such a high ranking in per capita income along with a low rural per capita household assets position might not be disturbing, if the explanation is that there is a more equal distribution of rural assets in the State than in other States. But this is not so, as seen earlier. In rural Tamil Nadu, 67.73 per cent of rural households have assets below Rs. 5,000, while 32.27 per cent of rural households have incomes from Rs. 5,000 to Rs. 1 lakh and above. In fact the State has the largest percentage in All India of rural households (25.54 per cent) at the level of destitution, which in terms of assets, I define at below Rs. 500. It also has the largest group of rural families at 38.13 per cent among the States which hold assets below Rs. 1,000. The policy implication in terms of rural land and assets distribution or the poverty eradication programme to which the State and National Plans are committed are thus both imperative and urgent.

Finally, the correlation between per capita hectarage and the net sown area with assured water supply on the one hand and rural household consumption expenditure on the other seems to point to the same conclusion. Earlier it was pointed out that the State has the third highest percentage of the country's irrigated area (in terms of the State area irrigated it is second only to Punjab). But in terms of the average monthly rural household consumption expenditure, the State is at the bottom of all the States (at Rs. 131.65). The only explanation for this curious co-existence of its being the second best irrigated State and having the lowest rural family consumer expenditure, and, via assets, of income, is the unequal distribution of its irrigation resources in terms of farm families. As the RBI survey on rural assets indicates 67.72 of rural households in the State own only 13.27 per cent of farm lands and other assets, while 33.28 per cent own 86.73 per cent of the rural assets. In fact while 25.54 per cent of rural families (described earlier as the destitutes) own 0.86 of land and other rural assets, 7.15 per cent of the rural families own 51.01 per cent of land. The presumption is

therefore that irrigation benefits accrue largely to "the progressive farmer", who is always the well to do farmer belonging to the 33.28 *per cent or the* 7.15 *per cent* of rural households referred to above. In addition, the fact that 49 per cent of the cultivated land is under somewhat *primitive dry farming conditions,* and that the State has only in the last 4 years (since the RBI Survey) made a start in industrialising the backward rural areas through SIPCOT and the backward areas incentive programmes adds to the complex of reasons that explains that the mere spread of irrigation facilities is no guarantee of rising rural levels of living. To attain or more towards this objective, there is need for a more equitable distribution of the access to irrigation facilities (for the benefit of the small farmers)—the President of the Indian Agricultural Economic *Association* proposed last year the nationalisation of underground water resources for this purpose, the spread of the new technology to dry farming areas and for the diffusion of agro-processing and agro-industrial manufacturing units to the rural countryside.

BOOK-REVIEW

(i)

Book : Plan for Khadi and Village Industries.

By

REGIONAL PLANNING INSTITUTE,
Gandhinikatan Ashram, Kallupatti, Tamil Nadu.

The Plan for khadi and village industries, prepared by the Regional Planning Institute at Kallupatti, Tamil Nadu for East Ramanathapuram development district, is well presented in six chapters. The first chapter deals with a brief profile of the study area. In chapter two, objectives and methodology of the plan are explained. Finance and organisational structure of the implementing agencies are covered in chapters three and four. Programmes of development are detailed in chapter five. Matters relating to implementation and follow up are dealt with in chapter six.

As every plan should be made with a sound backing of detailed knowledge and data, a comprehensive socio-economic data of East Ramanathapuram Development district is presented in the first chapter of this plan, as an Area Profile. But, as this plan concentrates more specifically on village artisans, a study of their socio-cultural activities with environmental realities of their life could have been attempted as it would help to locate and identify the problem. This alone would decide the development absorbative capacity of the area. The plan has a unique character in the sense that it does not propose any centralisation or modernisation scheme. The beneficiaries of the proposed plan would remain in their usual setting doing the customary work efficiently and profitably.

As stated in the second chapter, the objective is to improve the level of employment, earning and well being, while still retaining their place in the rural society. Again in the same chapter, it is said that the successful tackling of twin problems of under employment and unemployment is the major objective of this plan. This is a sound approach to attack poverty in the backward area by way of increasing the level of employment. The envisaged financial outlay of the plan is Rs. 14.63 lakhs including a grant of Rs. 1.11 lakhs. Among the village industry programmes, khadi receives top priority for which Rs. 6 lakhs is allocated involving 252 units of additional effective full employment and additional earning of Rs. 1.88 lakhs accruing to the artisans per year. The rest of village industries in order of financial allocaton are chank industry, palmgur, oil crushing, carpentry, and blacksmithy, brick making, lime kiln, pottery. The sources of finance for the proposed plan are the Khadi and Village Industries Association and commercial banks. The document suggests that these programmes of improvement of village industries be implemented by five agencies (viz), Tamil Nadu State Khadi and Village Industries Board, the Ramnad-Madurai

District Palmyrah Jaggery Co-operative Marketing Federation, other Industrial Co-operatives, Tamil Nadu Sarvodaya Sangh for Ramnad district, Tamil Nadu Gandhi Smarak Nidhi.

The detailed programmes for each village industry are elaborately given in chapter Five. The next stage in the implementation process will be to prepare feasibility reports for the schemes and a steering committee should supervise the different phases of implementation.

The plan was prepared with full backing of micro level socio-economic data after discussion with different cross sections of people and officials concerned with village industries.

Another important point for serious consideration occurs in the lines on page 53, i.e. " success of a programme of assistance depends on the general awakening among the beneficiaries " ...... "without such awareness among the tappers, no programme can be foolproof". If the whole success of this programme or any programme hinges on such awareness, is there already enough awareness, if not, how is such awareness to be created? or how to awaken the people to be conscious of their problems and development? Whatever the economic and social help extended, as decided in the plan, it would not result in expected level of development. Whatever new schemes like Harijan involvement in the khadi scheme, more utilisation of funds under D. I. R. Bank schemes (as proposed in the plan)—these will not deliver the goods unless a multi-disciplinary approach through effective. non-formal education is also launched, That is to say, the beneficiaries should be first animated to feel their own problem through imparting problem oriented education, mainly based on their social and cultural behaviour.

Instead of over optimistic assumptions and hopeful expectations of the planners, the realities of the area situation should be built into the plan at the approach. level, if district planning is to be effective, For this, it is a must that every plan should provide for a non-formal educational component related to the goal of the plan.

V. RENGARAJAN.

(ii)

Book: Pulses - An Analysis of Demand and Supply in India 1951-1971.

By

Kusum Chopra and Gurushri Swamy—Institute for Social and Economic Change, Bangalore 1975.

Sterling Publishers Private Limited,
AB/9 Safdarjung Enclave, New Delhi.
Rs. 30/- Pages 132.

Pulses form a major protein component in the Indian diet, particularly of the vegetarians and poorer sections of non-vegetarians. Both the demand for and supply

of pulses are relevant to the Indian Agricultural Economy in the context of deficiency of protein in the diets and the several agronomical aspects which make pulses an important crop in the dry land areas, in the crop rotation system, as a mixed crop and as a green manure crop. There are eight States which are important suppliers of pulses to the country, namely Uttar Pradesh, Punjab, Rajasthan and Madhya Pradesh, and to lesser degree, Bihar, Maharashtra, Andhra Pradesh and Karnataka. The authors have traced the output and acreage of pulses in these eight States for a period of 20 years and examined in detail the causes for the steady decline of pulses in the above crucial States in spite of the inherent advantages of growing the crop and the high prices prevailing at present for all types of pulses.

The projection of demand shows that the availability per capita of pulses will deteriorate further vis-a-vis a rise in demand unless steps are taken immediately to bring about an increase in the output of pulses. The possibility of doing so by an increase in acreage is limited and hence attention will have to be concentrated on improving the productivity by the introduction of high yielding varieties, application of fertilisers, use of irrigated acreage, introduction of shorter duration pulses crops, aad arranging for a better rotation to include pulses.

The dilemma facing agriculture has to be squarely faced. Pulses are important from the national point of view but from cultivators' point of view pulses stand very low in the order of priority. How this dilemma is to be resolved has not been stated explicitly in this book. Mere increase in price—a universal prescription of economic doctors—has a limit vis-a-vis containment of inflation and of competing products.

Secondly crash programmes were launched since 1970 in various States including Tamil Nadu to increase the production of pulses, but the authors are silent about the expenditure on these schemes and an appraisal of the resultant quid pro quo.

Thirdly such a study exclusively of one source of protein seems to be one in vacuo. There are revolutions going on besides the Green Revolution namely the White Revolution in animal husbandry, Operation Flood and other steps to bring increasing quantities of milk within the reach of the common man at a price he can afford, the Blue Revolution in fisheries ostensibly with the same object and crash programmes in Horticulture—to increase the intake of fruits and vegetables. An assessment is necessary not only of these schemes, whether they have achieved the purposes as proclaimed by their protagonists and if so, how they will react on the demand for pulses. A static equilibrium study of pulses necessarily ignores these complex competing variables.

In spite of these shortcomings the study is a valuable one and has to be highly commended for the light it sheds on one important source of protein in the Indian dietary.

M. SRINIVASAN.

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